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THE Finish Line

IT'S TEAMWORK THAT COUNTS — Ask Red Grange, Tom Harmon, Ernie Nevers, or Dutch Clark the secret of his success and we will bet you ten to one that the gist of his answer will be — "Eleven good men working as a team. Without all of us working as a coordinated unit my name would never have appeared in headlines on the sports pages."

Read Harmon's book, "Pilots Also Pray," and you will get the same story.

So what?

No, we're not turning the Finish Line into a sports page — but — wo do need a little of this same teamwork between the many scattered plants which make up our industry — some of them quite small — if we are to accomplish the job ahead.

Rugged individualism is a great characteristic, but when it comes to bucking the competition of corporations of the size that control many of the products competitive to porcelain enamel, we are afraid that the "rugged individualist" will be lost in the shuffle.

How many times have you heard an industry member say: "We can't hope to compete in sales effort, advertising or promotion with the large companies or corporations which control our major competing products. Our company is small and there just isn't the money in the enameling business to enable us to compete with these large companies."

A true statement as far as it goes! But, there *is* one way that we can compete successfully, and that is through coordinated teamwork.

Back to the mouse trap

The "better mouse trap" story may be time-worn, but it is apropos for comparison with some of the "better enameled products" that have been evolved over a period of years. We can think of more than one innovation, produced by a progressive enameler, that has died on the vine or won only local success due to an apparent desire on the part of the enameler to "keep it for himself."

A little more "generous" attitude on the part of the original producer in "sharing the idea" with enamelers throughout the country so that they could "work as a team" in popularizing the new innovation might, in many instances, have represented the difference between the development of a new market and the demise of a good idea.

For new or old

Whether it is the popularizing of a new product, or the meeting of competition for porcelain enamel as a finish, the *product* must be sold *first* before local servicing plants can prosper.

If we, as an industry, ever come to the realization that in working *as a team* to sell porcelain enameled metal *as a product* we will feather our own beds as jobbers or manufacturers of table tops, appliance parts, kitchen ware, etc., we will have taken the first important step in producing a winning team.

Dana Chase

Editor and Publisher

A sign plant modernizes

story of a plant improvement program on the "as available" basis

By C. S. Owen • PRESIDENT, ATLAS ENAMELING COMPANY, ST. LOUIS, MISSOURI

ILLUSTRATED WITH FINISHFOTOS EXCLUSIVELY

Exclusive feature finish

It was only natural, in starting an enameling plant a number of years ago, that signs were selected as the chief production for the plant. I say this because I was in the sign business, both in Denver and St. Louis, for the years immediately preceding the organization of Atlas Enameling Company. The company started in a small way about twelve years ago as a plant for job enameling, specializing in the production of porcelain enameled steel signs. About ten years ago we moved to our present location and have operated, up until the war, with two box type furnaces.

War work exclusively for 29 months

When the war broke we immediately set up to specialize in machine work, which was so critical at that time, and we utilized our plant and organization, up until recently, solely on war contracts for the army, navy and signal corps. We had a war plant with three rows of machine tools, including turret lathes, engine lathes, drill presses, shapers, milling machines, power hack saws, Doall saws, etc. We closed our enameling plant in June, 1942, in order to handle this entirely different type of work, and began enameling in a restricted way again in November, 1944. In the meantime we had completed plans for a modern enameling plant which would include the latest types of equipment and which would enable us to produce our products with a minimum waste of effort -- and with costs in line with the most recent advancements in enamel ware production.

Plant improvements made gradually

As can be readily understood, improvements that have been made in our plant to date were made under difficulties of war restrictions, both on materials and labor. As a result we have taken many months to complete certain major changes included in our plans, and there are still a number of important improvements to be made before our modernization plan will be complete. A typical example was in the instance of our new enamel dryers. It was impossible to procure what we wanted, so we fabricated most of the parts for our equipment in our own plant. This was done with the knowledge that the cost was considerably in excess of the amount for which the dryers could have been purchased had they been available from regular sources.

We took every opportunity to complete some small part of the building and modernizing program as labor or materials were made available. As I indicated, there are still some major improvements to be made, but our plant is today in a position to turn out volume work. As far as the major items of enamel plant equipment already installed are concerned, they are the latest available. As in the case of most plants today, the only thing that holds up large scale production is the critical labor situation.

Innovations in the new plant

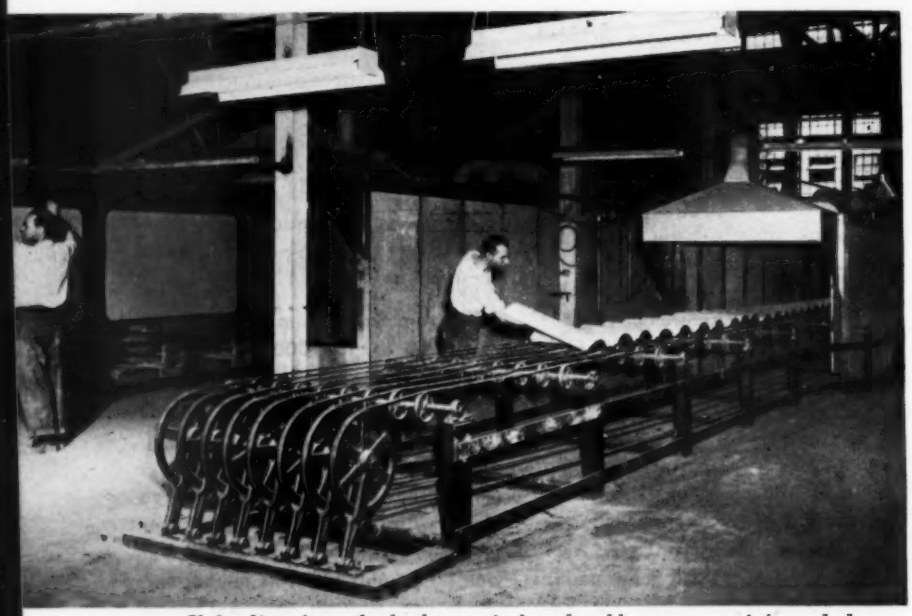
Our plant, as it stands today, includes a few features that might be termed innovations inasmuch as they have not been generally used in enameling plants previously. Examples are the infra-red dryers and solid lead tanks for acid pickling and nickel dip. A brief description of the plant equipment will serve to emphasize these points.

Mill room to have mills from 50 lb. to 1000 lb. capacity

There is nothing unusual to be claimed about our mill room. We do have adequate equipment and a sufficient variety of mill sizes to take care of the colored enamels which go along with the sign business. Our mill sizes formerly ranged as follows: One 50 pound, one 100 pound, two 200 pound, and one with 400 pound capacity. We are installing two 1,000 pound mills to take care of increased

The author, C. S. Owen, in his office at the Atlas plant.

Signs are loaded on the continuous furnace conveyor in the Atlas Enameling Company plant.



Unloading from both the vertical and cable conveyor infra-red dryers.

This corner view of the Atlas plant shows large glazed and glass brick areas.

load in this department.

Here is one department where our plans have not been completed. A balcony is to be installed over the mill room section for storage of frit and raw materials, as well as the storage of liquid enamel. The milled enamel will be pumped to the balcony for storage, and will be fed by gravity through the Roto-Spray and magnetic separator to the pressure tanks.

Pickle room has two solid lead tanks

The pickle room, we believe, is as modern as any manually operated pickle room. Obviously, continuous pickling equipment would not be suitable to sign and job work with the wide range of parts to be run, many of them odd shapes and sizes. The layout includes ten tanks 4′ wide, 5½′ deep and 13′ long. They follow, in the order of their arrangement: Two cleaner tanks, hot rinse, cold rinse, acid, hot rinse, nickel, cold rinse, neutralizer and an open tank dryer. All heated tanks, including the dryer, are served by closed steam coils. In the sulfuric acid and nickel tanks lead coils are used.

Steam is furnished from a 35 h.p. vertical boiler, fired with oil, which is located in one end of the pickle room. There is also a run from the main heating boiler which can serve as a supplementary heating source at any time the pickle room boiler would need to be supplemented.

All tanks are of steel, except the sulfuric acid and nickel tanks. These are of solid lead, reinforced on the outside with strip steel. While solid lead pickling tanks have been used in the steel industry, it is our impression that they are an innovation in porcelain enameling plants.

Ventilation for the pickle room is provided by a 48″ expulsion fan located at near ceiling height above the acid tank.

All enamel applied by spraying

Due to the type of work we run, all spraying is done manually. We have four 5′ x 12′ spray booths in line. These are adjacent to the cable conveyer. When signs are sprayed

they are hung on the overhead conveyer serving the vertical dryer. We shall soon have a large booth installed over the entrance end of the cable conveyer so that flat work can be sprayed on the conveyer and moved immediately into the drying oven. This booth is not installed at this writing, but is included in our plan and will be completed as soon as possible. All ground coat is normally handled on the night shift, and the finish coat application is handled in the day time.

Infra-red type dryers

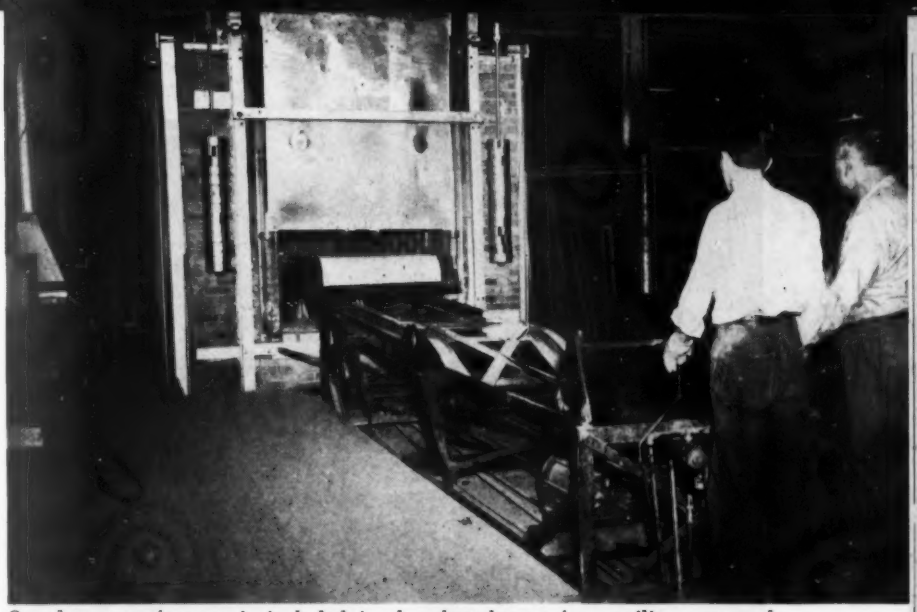
I referred to the vertical and cable conveyor dryers. These are both insulated sheet metal dryers and are installed parallel so that they are easily accessible from the spray booths. They are run at right angles to the loading conveyer of the continuous furnace so that both can feed the furnace chain at the same time.

I believe our plant is one of the first to install gas-fired ovens using infra-red burners for the purpose of drying porcelain enamel. We have found these dryers very effective. As a matter of fact, our enameling superintendent reports that in many cases where it required from 30 to 45 minutes drying time in room dryers with blowers, similar parts are now drying effectively in as short a time as three to four minutes. We have even run heavy gauge steel sanitary ware through the equipment by allowing slightly increased drying time.

The vertical dryer is 40′ in length, and is normally run at a chain speed of about 12′ per minute. It has 32 infra-red burners in two banks — 20 burners and 12 burners each, respectively. Through the use of a controler pyrometer the temperature is set at about 350° F. for ground (ground coat on both sides of the ware calls for increased moisture dissipation) and about 250° F. for colors. When the large 12′ spray booth is installed over the conveyer feeding to the horizontal dryer, the spray speed will naturally affect the time cycle for that dryer.

Brushing department to employ suction tables

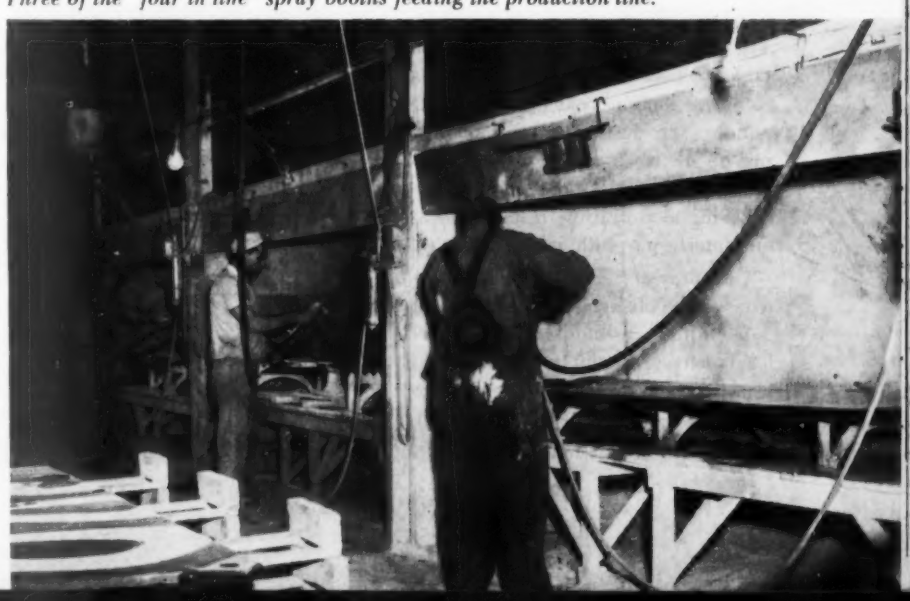
This section of the plant is one



One box type furnace is included in the plant layout for auxiliary use and for unusual shapes and sizes.

Much of the ware enameled by Atlas is also fabricated in the plant.

Three of the "four in line" spray booths feeding the production line.



This manual operation of screening and magnetic separation of milled enamel will be changed in the new plant to gravity feed from a storage balcony.

that has not been completed in line with our final modernization plans. At present we brush on tables located on the floor of the main section of the enameling plant. Our plan includes the building of a balcony brushing room where all brushing will be handled on exhausted suction tables. This balcony will have a complete suction system to eliminate unnecessary dust. Our present ceiling height is 35′, so it will be comparatively simple for this balcony brushing section to be installed without interfering with other activities.

Our present service conveyer system will be changed so that all ware is fed to the brushing section by overhead conveyer, which will, in turn, transport the brushed ware to the furnaces.

Our main production unit for burning is a straight away, continuous furnace 70′ long, with a 20′ burning chamber. We find this furnace "eats" work but, of course, under our present conditions of labor and material it is impossible to keep it operating at capacity. The furnace is fired with oil and is built to take fabricated parts up to the largest sizes we normally run in large production.

For auxiliary use in the firing of ware not suitable for continuous furnace firing we have a 5′ x 13′ box type oil fired furnace. This furnace is located close to both the drying ovens and the service conveyer chain.

Plant well ventilated

As those who have visited St. Louis know, we have some "hot" days in the summer time. It has always been my feeling that ventilation is doubly important in an enameling plant with its many heat sources adding to normally high room temperatures.

The main section of our plant has four large 48″ expulsion fans to take off heat. These are equally spaced across the width of the plant, and one is located almost exactly above the box type furnace. There are also three exhaust fans in the east wall, running parallel, and within a few feet of the center of the continuous furnace hot zone. One of these is a 24″ fan, the other two 18″ fans. The 24″ fan is adjacent to the hot zone. These fans for expelling the overheated air, combined with a ceiling height of 35′, help considerably in minimizing excessive heat.

One feature of the enameling plant that has been mentioned by several visitors is the housing of our compressor and blower motors in a small room designed specifically for this purpose. One wall of the room is built of steel sections in which are installed glass wool filters. This prevents dust from entering the compressor room.

Porcelain enameled reflectors used throughout the plant

Another feature to which we have become accustomed, but which has attracted the attention of plant visitors, is the "daylight" conditions of operation for both day and night. We have large areas of window space, plus glass-block wall sections, which afford access to an unusual amount of natural light during the day. We use well spaced fluorescent lighting in most of the plant, and when our modernization program is finished the entire plant will be completely equipped with fluorescent lighting units — with porcelain enameled reflectors.

In addition to enameling, we have facilities for fabrication of all types of signs, and similar sheet metal products. In fact, a big percentage of the work we enamel is also fabricated in our plant.

A big future for porcelain enameled signs is ahead. I think it goes without saying that I have always

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The public be served!

Look to your retail outlets if you would hold public favor for your post-war products

By Geoffrey F. Morgan • AUTHOR, EDUCATOR, LECTURER • SANTA MONICA, CALIFORNIA

finish

When I was superintendent of schools in Athens, Ohio, I often had occasion to talk things over with the clerk of the school board, George Whipple. George was the manager of the drug store, so that what talk we had was generally interrupted by the coming and going of the customers. One afternoon we were discussing the plans for the new gymnasium when the screen door slammed and a customer tapped on the cigar counter, just inside. George instantly excused himself and hurried forward, slid back the glass top, sold the cigar, dropped the nickel in the till, (this was in the days of "a good nickel cigar") and come on back to me.

"That's the most important rule in retail salesmanship, Geoffrey," said he. "Never let a nickel get out of the store."

I often think about this chance remark, because I often have occasion to observe violations of this primary precept. In fact, I sometimes wonder how big business men get to be that way when I see how stupid some of them seem to be about the management of their business. Note that I say "seem to be," because I know they can't really be as stupid as that. But I can't help wondering, just the same.

A "top hat" causes trouble

Just the other day, for example, I got an urge to buy an opera hat. That's the Hollywood influence, no doubt, for my home is now in Southern California. Opera hats are expensive, of course, and you have to go to the city to buy them, so I cashed a check and put the money in my pocket, got out the car and drove into Los Angeles. I don't go there often enough to feel very much at home, but I did realize that I had better go to a big store in order to find a big selection.

The store I chose was one where I had never been, but I had seen the name so often and read the advertisements that I felt sure it would be all right. At least it was big enough, one of the biggest in the city, covering about half a block. I walked down Broadway and stepped in at the nearest entrance. Well, I only had to look around to realize that I was not in the men's section. In fact, most of the garments in sight seemed to derive their name from the late lamented Amelia Jenks Bloomer. No matter — there would be a floor walker inside the door and he would tell me where to go.

But no, there was no floor walker inside the door. In fact, there was no floor walker anywhere else that I could see, so I waited for a moment, thinking he would appear. But nothing happened, so I walked slowly down one aisle towards the back, and then crossed over and walked back again — still without finding any one to greet me. Of course you will say that, metaphorically at least, the high hat had gone to my head, but I maintain that my annoyance was due to something far more fundamental. Unconsciously, perhaps, but nevertheless quite definitely I felt that I had done that store a favor. I didn't have to go there. There must be twenty stores in all Los Angeles that sell opera hats. Very well, then, out of all that twenty I had chosen this store to be the recipient of my trade, if not actually the object of my bounty. I had cashed my check and put it in my pocket and driven into town with the express purpose of spending it in this particular store. Apparently the store did not appreciate my patronage and, after all, few injuries rankle more deeply than base ingratitude. Still, I was willing to give them one more chance. There was a pretty girl behind a nearby counter, so I said to her: "Don't you have floorwalkers, or managers, or something

of the sort to show the customers around?"

"Indeed we have," said she, politely. (I think I said before that she was a pretty girl.) "Can't you find one?"

"Not yet," said I. "Of course I haven't covered all the store yet, but I've not had any luck thus far."

"Let me look," said she, and she stretched herself on tiptoe and looked down one aisle, and then she moved beyond the post and stretched and looked down another, but like myself, her search was also unrewarded.

"There must be some one somewhere around," said she, exemplifying the maxim that hope springs eternal in the human breast.

"No doubt," said I, "but let's not trouble them. After all, there must be other stores around, too." So I smiled sweetly on the pretty girl, and then I walked out of the store and down the street a block or so and found another store with clerks that wait on people, and there I bought my hat. Of course, I have never been back to the first one. I often see its signs, and read its advertisements but after all, once bitten is twice shy.

Troubles of a motorist

The winter before the war I was driving in the east, and the car seemed to need some slight attentions, so I drove into a huge garage in one of the largest cities in Pennsylvania. The entrance to the service department was quite attractive, because it was lined with attractive and attention-getting signs offering special combination bargains in parts and services. You know the sort of thing: "Get ready for winter driving. Special combination offer. Oil changed, complete lubrication, wheels adjusted, bolts tightened, shock absorbers refilled, $9.65, or $5.69" as the case may be. There were a lot of these signs, and they reminded me of parts and repairs and operations and adjustments that I would never have thought of by myself. I sat in the car a few minutes and waited. Nothing happened, so I got out of the car and waited a few minutes more. There were a lot of men about, but nobody to wait on me. I had the work, and also the money to pay for it, and the garage had the service to sell, and the men to perform it, but apparently we couldn't get together. Finally a greasy-faced mechanic passed.

"Are you the boss around here?" I asked.

"No I ain't," said he, and he went away.

After a while another man came by.

"Who is in charge around here?" said I.

"The foreman," was the reply.

"Where is he?"

"Somewhere back there, I guess," said my informant, indicating a huge floor thickly crowded with cars, and trucks, and implements and devices, and people coming and going.

"How do I get hold of him?"

"Don't know," said the man, and he also wended his way elsewhere.

About that time a man in business clothes came hurrying from the offices into the shops, so I stopped him and said, "Can you tell me something?"

"I'll try," said he.

"Then tell me," said I, "why do you advertise, use signs and displays, and dress your windows, and go to all this trouble and expense to bring customers into your garage, and then ignore them after they arrive? I came in here because I saw your advertising. These signs on the walls all around us must cost money. So does your building, and your Neon sign. Now I'm a total stranger. I never saw this place before. But I'm here, and I have money in my pocket, and I want to spend it in your place, and yet you don't pay any attention to me. There isn't any one to greet me, to find out what I want, to offer any sales suggestions, to lift a finger to take the money that I want to spend for labor and materials."

Well, of course that did the trick. A change came o'er the spirit of his dreams, as the poet says, and after that I got results. For once I weakened and had the work done there instead of going somewhere else, but not because the shop deserved it. If that place stayed in business at all, it was *in spite* of their business methods, and not because of them. There is no use multiplying these examples, because every man has had as many as myself, and there is literally no end to them. Talk about never letting a nickel get out of the store! I have known of cases where clumsy business men have let thousands of dollars get out. Every man is a stranger the first time he comes into a place of business, and one of the best maxims of industry is the one that says *business goes where it is invited, and it stays where it is well treated.*

Too much sales psychology and not enough service

There is too much talk about sales psychology nowadays, and not enough

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More about Cinderella

and porcelain enameled table tops

with comments from manufacturers who build the tables that use the tops

IN April 1945 *finish*, Jay Gary, editor of "Furniture Age," voiced a few candid comments on table top designs under the title "Cinderella was a Glamor Girl Compared to Porcelain Top Tables."

Your editor's desk has held many interesting letters in reference to Mr. Gary's comments. These have come from both furniture manufacturers and table top producers.

The general theme of the correspondence would indicate that there has been considerable improvement in furniture and table top design in the years just preceding the war. Most writers are frank to admit that there is still room for constructive change. We will quote in this issue from two of the letters received:

D.F.H. Novelty Furniture Co., Inc.
Brooklyn, New York

Dear Mr. Chase:

"We find your tear sheet from the April issue of *finish* highly interesting, informative and constructive.

"Our only response is that the manufacture of this type of set is in answer to a demand from both store buyer and consumer. As a manufacturer, we feel that it is part of our business to meet such demand.

"We have quite a few thoughts on porcelain top tables and would like to have an opportunity of talking with you on your next trip East.

"We feel that you are in a position to help us give a lift to the industry."

Signed: J. Goldman

Rest assured finish *will take any steps that seem feasible to "give a lift to the industry."*

Kompass & Stoll Co., Inc.
Long Island City, New York

Gentlemen:

"Cinderella Was a Glamor Girl," was extremely interesting . . . we have built a successful business on breakfast sets that are not 'Polish Renaissance' (we call them 'Bronx Renaissance').

"By the way of comment, would state that your article would have been a justifiable criticism prior to 1939 or 1940, but is not the true picture of breakfast set styling since that time.

"We are one of the few who have always styled our merchandise along simple, graceful lines, without endeavoring to see how much lumber we could incorporate into the tables and chairs. We enclose a few photographs which are self-explanatory in substantiation.

"In the writer's opinion, Howell Company were the first to bring out simple, graceful, attractive styles in their chromium furniture, same as we did in our wood dinette furniture, using porcelain tops. Incidentally, we have always been successful in our sales of breakfast room and dinette furniture, using maple tops and plastic tops, in addition to porcelain tops.

"After Howell attained their success with chrome, the writer would definitely state that all borax sales were substantially cut down and lost retail favor. The writer attributes this mostly to the influence of the younger generation who attend high

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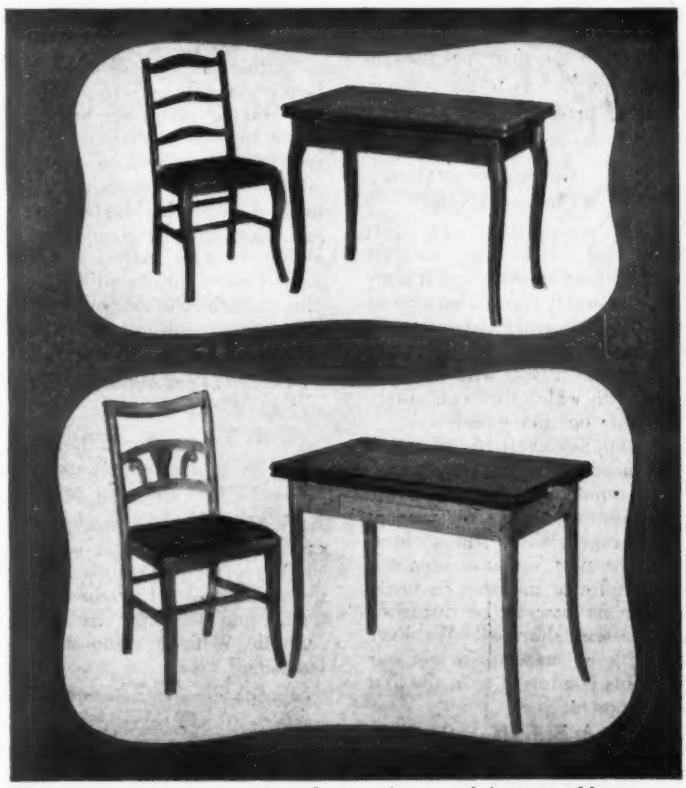

These are two representative designs in porcelain top tables manufactured by Kompass & Stoll Co. There is quite a design contrast between these and the ones used to illustrate Mr. Gary's article.

What manufacturers say about

washing machine production

last minute letters from some of the leading producers

FOLLOWING the release of information that restrictions had been eased on the production of washing machines and other household laundry equipment, *finish* was desirous of getting "straight from the shoulder" information from leading producers. The following are excerpts from communications in reply to our letter of inquiry in which we asked:

1. How soon do you expect to be producing some washers and/or ironers for consumer use?
2. What are the principal current retarding factors to the resumption of production?

Conlon Corporation
Chicago, Illinois

"We are reconverting our plant right now and will be ready to start rolling household washers and ironers down our assembly lines as quickly as our suppliers can make deliveries.

"When will that be? That, in turn, depends, just as it does with us, upon the speed with which they can obtain and fabricate necessary materials.

"With supplies available of everything we need, we could start manufacturing tomorrow. Shortages are the big question mark. We are not too discouraged about them, however. In the past we have seen too many examples of industry resourcefulness for us now to be disturbed by any present shortage. We have utmost faith in suppliers to get our requirements coming to us at the first feasible moment."

Signed: B. J. Hank, President

Electric Household Utilities Corp.
Chicago, Illinois

"We are now producing Gladirons for civilian supply, and, as we have been making washing machines throughout the war period for the Army and Navy, do not anticipate any particular difficulty in expanding production on July 1st, when the industry will be allowed to return to production for civilian use."

Signed: E. N. Hurley

The Maytag Company
Newton, Iowa

"With WPB's announcement of its intention to permit the building of washers and ironers during the last half of the year, there is a strong temptation for a manufacturer to throw his hat in the air, shout 'hurrah' and issue a publicity release about the tens of thousands of shiny new washers and ironers which will soon be rolling off his assembly lines. So far we have resisted this temptation. We have not made any prediction as to when we expect the first washers and ironers to be available for consumer use.

"Although we still have a fairly heavy schedule of war production in the Maytag plant, we are well prepared to resume civilian production and we expect to have both the facilities and the manpower available to produce all the Maytags for which materials will be available. Availability of raw materials and component parts produced by our suppliers will be the determining factors as to both initial production and rate of increase."

Signed: Fred Maytag II, President

Norge Division,
Borg-Warner Corp.
Detroit, Michigan

"We expect to be producing washers in the third quarter of this year.

"The principal retarding factor to the resumption of production is material, and the high in the list of scarcities is 'finsh' or, in other words, lacquers."

Signed: Howard E. Blood, President

Let's hope that porcelain enamel need never be classed as a retarding factor.

Voss Bros. Mfg. Company
Davenport, Iowa

"The question, When Can We Expect Some Voss Washers? is a hard one to answer because of the uncertainties of the future, but we believe the following information will be helpful to you.

1. Suppliers of raw materials advise us that it will be four or five months before we can secure delivery of the necessary materials, even though we have had them on order for two years or more.
2. The man-power problem is another item that must be considered. Only those factories that can secure the necessary labor will be permitted to produce washers. The progress of the war against Japan will, of course, change this at any time.
3. We estimate it will require from 30 to 60 days, after we receive materials, before we can start shipping sample washers.
4. Our plan will be to furnish floor samples only for all authorized dealers before quantity shipments are made.
5. Because of the metals and manpower situation and the scarcity of these, we do not believe any quantity of washers can be shipped before the latter part of 1945.

We, naturally, are eager to get back into the making of Voss Washers as soon as possible and will do our best to produce them at the earliest date."

Signed: E. F. Voss

Easy Washing Machine Corporation
Syracuse, New York

A recent published report from this company indicates that plans are being laid for a limited number of washers to come off the production line some time during the third quarter. According to President H. Paul Nelligan, all engineering on immediate postwar models is complete. Tooling up, adapting increased plant facilities and securing materials is being carried out while maintaining war contract production schedules. Though planning for a third quarter start, Easy says that no definite production-starting date can be forecast until clarification of the problem of material availability.

Even with all reconversion factors favorable, it is expected to be late in the fall before washers appear in worthwhile quantities in stores.

Electrostatic spraying of porcelain enamels

a detailed report on an investigation of a new method of enamel application

By James B. Willis • RESEARCH LABORATORIES, PEMCO CORPORATION, BALTIMORE, MD.

PART II

IV. Method of Procedure

(1) Atomization

The greatest obstacle which had to be overcome was found to be atomization of the enamel. In spraying paints or lacquers, the stream of fluid emitted from the gun has the appearance of a very fine mist, almost a cloud. These materials, by virtue of their physical properties, are comparatively easy to reduce to a fine degree of atomization. Porcelain enamels, with their increased viscosity and particle sizes, it was believed, would be considerably more difficult to atomize. Consequently, in a study of each of the variations in the physical properties of the material and the mechanical operation of the spraying process itself, sample plates were made which would indicate the degree of atomization attained.

Small glass plates were passed through the spray approximately two feet from the gun, receiving a light dusting of the material. A representative section of each of these atomization samples was photographed at a magnification of 20 diameters, and the photograph was used as a basis of comparison of the degree and uniformity of atomization.

(2) Location of Spray Gun

Previous experience on the part of the Harper J. Ransburg Company had indicated that the position of the gun was important. Wherever a high savings of material was desired, the gun must be located so that the axis of the spray was directed at an acute angle to the surface being coated; an angle of 15 degrees was normally used.

To determine whether or not the same factors which controlled the location of the spray gun in the spraying of paints and lacquers also controlled the location of the spray gun in spraying porcelain enamels, the spray gun was located in several different positions and at varying angles with the surface being coated.

(3) Control of Fluid Volume

To determine the volume of fluid being delivered by the spray gun by any given fluid pressure and for any given viscosity or flow time for an enamel slip, a series of slips was made up with varying specific gravities and flow times. The minimum pressure required to start the slip flowing through the gun and the volume of fluid delivered at intervals from this pressure to the maximum capacity of the pressure-regulating device were measured for each slip. Three samples were taken for each slip at each fluid pressure and the average volume delivered, as computed from the three trials, was taken as the fluid volume delivery at the given pressure and consistometer flow time.

From the curves plotted from data obtained in this determination, new curves were plotted, showing constant-pressure lines when the flow time in seconds was plotted against fluid delivery in cubic centimeters per second; these were used throughout the investigation in determining the volume of fluid delivery in spraying and atomizing tests.

(4) Effect of Clay Content

It was suspected that the clay content of the enamel slip might have an appreciable bearing on the ability of that slip to atomize and therefore on the ability of the slip to react satisfactorily to the force of the electrostatic field. To determine to what extent the clay content actually did affect the atomization, characteristic enamel slips were prepared as indicated in Table I.

TABLE I
COMPOSITION OF ENAMEL SLIPS USED TO DETERMINE EFFECT OF CLAY CONTENT

	Enamel mill formulas (lb.)				
	(1)	(2)	(3)	(4)	(5)
Frit	100	100	100	100	100
Clay	6	4	2		
Bentonite		¼	½	¾	¾
Opacifier	2	2	2	2	2
Magnesium carbonate	¼	¼	¼	¼	
Sodium aluminate					¼
Sodium nitrite					¼

Each mill was ground to a fineness of 2% on 200-mesh.* Each slip was adjusted to a specific gravity of 1.69 (± 0.005). The flow time, that is, the time required for 100 cc. of fluid to pass through the flow tube, was adjusted by the addition of a saturated solution of sodium nitrite until the flow time for all slips was equal.

With the flow, specific gravity, and fineness of each slip the same, an atomization sample was prepared for each one by the method previously described and a comparison was made between the atomization samples.

(5) Effect of Specific Gravity or Water Content

To determine the effect of specific gravity, or water content, of the slip on the ability of the enamel slip to atomize and also to react to the electrostatic field, an enamel of the following composition was milled: 100 lb. frit, 12 oz. bentonite, 2 lb. opacifier, 4 oz. sodium aluminate, and 4 oz. sodium nitrite; fineness, 2% on 200-mesh sieve.

Gallon samples of this slip were adjusted to the following specific gravities: 1.50, 1.55, 1.60, 1.65, and 1.695. The flow time was determined for each slip so that the volume of fluid delivered through the gun might be known at any time. A sample plate

* Fineness determined by Porcelain Enamel Institute standard fineness tests.

was sprayed with each slip at fluid pressures varying at 2-lb. intervals from the minimum pressure required to keep the fluid flowing through the gun up to 14 lb. fluid pressure and at atomizing pressures varying at 5-lb. intervals up to 20 lb. The degree of atomization for each combination of flow time, specific gravity, fluid pressure, and atomizing pressure was made by the same procedure as previously used. A conveyer speed of 2½ ft. per minute was necessary to provide enough time for satisfactory coverage. No investigation was made above a specific gravity of 1.695 due to the fact that at the higher specific gravities it became necessary (in order to obtain a low enough flow time) to reduce the set of the slip by additions of tetrasodium pyrophosphate to the point where suspension was too poor. Specific gravities above 1.70, moreover, resulted in a spray too dry for practical purposes.

(6) Effect of Set

Six samples, of one quart each, were taken of an enamel ground to a fineness of 1% on 200-mesh. The milled composition of the sample was the same as that used previously in the study of specific gravity or water content. All samples were adjusted to a specific gravity of 1.70. The flow time was measured for the group of samples and was found to be 15.6 seconds. A saturated solution of sodium nitrite was added to three of the samples increasing the set of each in proportion to their ultimate flow time, in seconds, of 18.5, 21.3, and 22.7. Tetrasodium pyrophosphate was added to two or more of the samples in the same manner, decreasing the set and flow time to 12.2 and 10.9 seconds.

Each plate to be sprayed was weighed before and after spraying and the amount of enamel deposited was calculated. All samples were sprayed in identically the same manner. The pressure at which each sample was sprayed was selected so as to give a fluid delivery of 2 cc. per second. Atomization samples were prepared for each enamel.

(7) Effect of Fineness

The preliminary investigation indicated that no considerable variation in results might be expected as the result of minor variations in the fineness of the enamel. To determine the exact extent of such variations as might be expected, samples were milled to the following finenesses: 15% on 200-mesh, 10% on 200-mesh, 5% on 200-mesh, 2% on 200-mesh, and 2% on 325-mesh. Each sample was adjusted to a specific gravity of 1.70 and the flow time was determined. Fluid pressures were selected for each sample so as to give a constant flow of 2 cc. per second. Plates were sprayed at an atomizing pressure of 20 lb. The sample plate was weighed before and after spraying to determine the amount of enamel deposited; each specimen was sprayed in exactly the same manner and for the same period of time. Atomization samples were again taken for each fineness.

(8) Overspray

Since the reduction in loss of coating material is important, the approximate percentage of overspray to be expected was determined. Six 10- by 12-in. sample plates were weighed, sprayed, and reweighed, and the amount of enamel deposited was calculated. In spraying, the plates were hung on the conveyer cable ½ in. apart; the cable was run at the rate of 2½ ft. per minute. The specific gravity of the enamel was 1.710; the flow time, 21.56 seconds; and the fluid delivery, 1.948 cc. per second. The atomizing pressure was 20 lb. (read on the atomizing line at the gun). The sample plates were sprayed for exactly 60 seconds, beginning when the first plate was opposite the last electrode wire.

V. Data and Results

(1) Atomization

For the purpose of identification, the atomization samples were divided into four groups. Figure 5, showing four such atomization samples before being enlarged, illustrates the method of classification. Number 1 shows a poor degree of atomization approaching the type of spray created by an ordinary enamel gun; the combination of very coarse and medium-sized particles is marked. Number 2 is still slightly underatomized, but the preponderance of large splotches has disappeared. Number 3 illustrates the most satisfactory degree of atomization, all factors considered, for electrostatic spraying porcelain enamels. Number 4 is an example of overatomization; particles are so fine that many of them are carried away in the air stream. A comparison of the atomization samples shows that the quality of the finished sprayed results may be anticipated with a fair degree of accuracy. The difference in particle size in such sprays is shown in Figs. 6 through 9. In Fig. 6, the atomization is quite coarse and decidedly nonuniform in character; Fig. 7 shows considerable improvement although it still leaves much to be desired in uniformity and reduction in particle size. The first two are likely to produce a sprayed surface too wet for practical purposes. Figure 8 illustrates the most satisfactory degree of atomization. Figure 9 indicates a spray so fine that, although a maximum degree of uniformity has been obtained, the surface produced would be dry and granular, and the amount of enamel lost in overspray would be excessive.

(2) Location of the Spray Gun

The most satisfactory results in sprayed finish and most efficient use of material is obtained when an angle of 15 degrees with the surface being coated is maintained. The atomized particles leaving the gun will vary somewhat in size and therefore in inertia. In passing through the field, those particles of greater mass will react more slowly to the force of the field and will require a greater distance for this force to overcome the inertia of the particles and direct them to the surface to be coated. If the angle is increased, there is a tendency to reduce the uniformity of the deposit through localization of the force of the spray from the gun. At increased angles, there is an increased tendency to develop orange peel; and, at increased angles of spray, there is also a tendency, however slight, for the smaller atomized particles to be carried away from the

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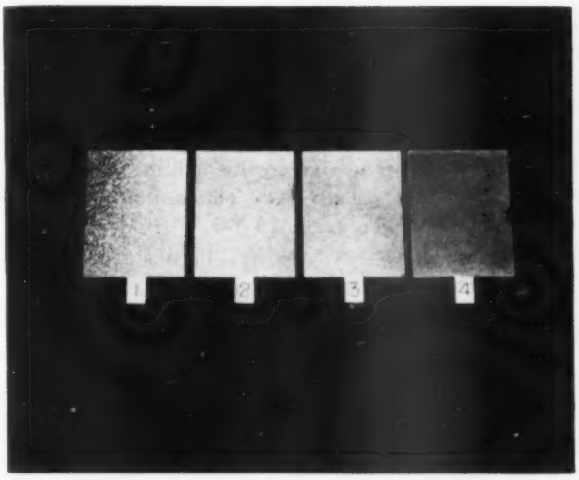


Fig. 5. — Classification of atomization samples.

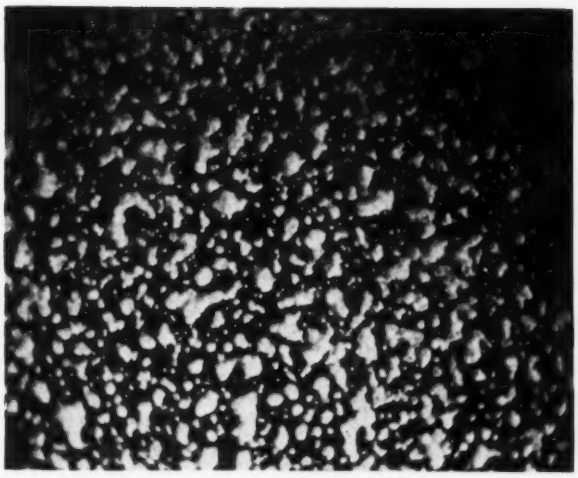


Fig. 8. — Atomization classification No. 3; normal atomization.

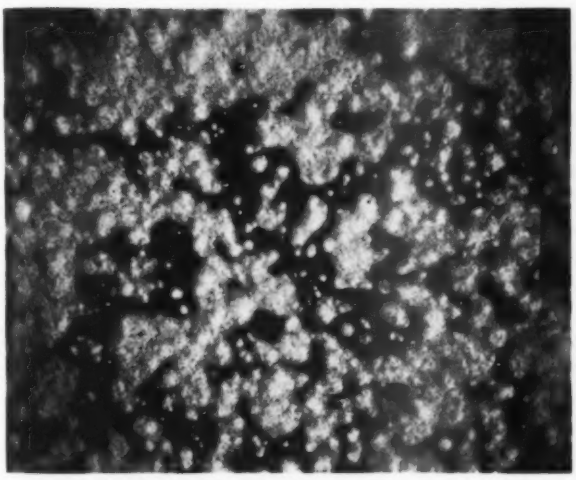


Fig. 6. — Atomization classification No. 1; poor degree and uniformity of atomization.

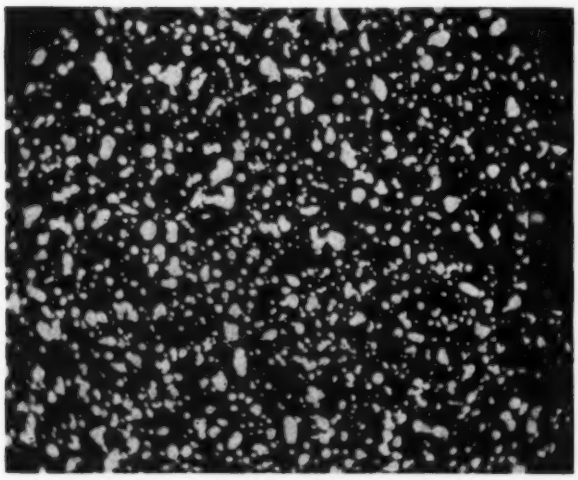


Fig. 9. — Atomization classification No. 4; overatomization.

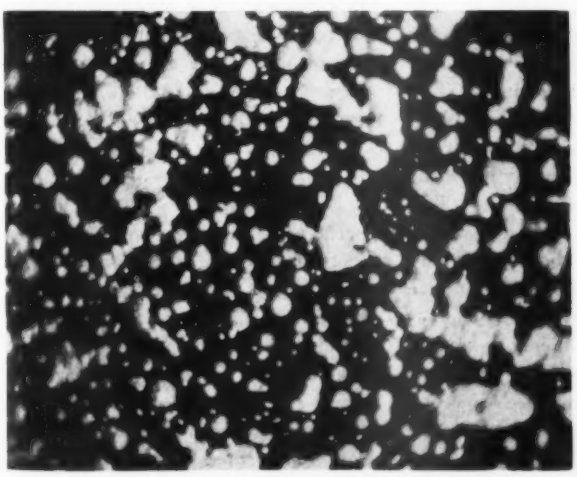


Fig. 7. — Atomization classification No. 2; slight degree of atomization.

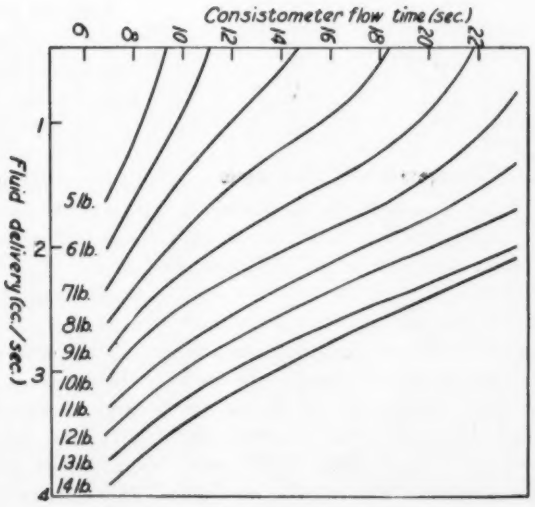


Fig. 10. — Constant-pressure curves.

→ *from Page 22*

surface of the ware by the force of the deflected air stream. Each dissimilar object that must be sprayed will require a variation in the location and number of spray guns for maximum coverage in order that those surfaces which cannot be completely covered by the force of the electrostatic field may be covered by mechanical force of the spray itself.

TABLE II

DATA OBTAINED IN MEASURING FLUID DELIVERY THROUGH SPRAY GUN WITH ENAMEL SLIPS OF VARYING VISCOSITIES AT VARYING FLUID PRESSURES

Fluid pressure vs. fluid delivery specific gravity and flow time constant

Sp. gr. 1.500, flow time 6.85 sec.		Sp. gr. 1.550, flow time 7.70 sec.	
Fluid pressure (lb./sq. in.)	Fluid delivery (cc./sec.)	Fluid pressure (lb./sq. in.)	Fluid delivery (cc./sec.)
3.5	0.888	4.0	0.830
6.0	2.009	6.0	1.729
8.0	2.613	8.0	2.426
10.0	3.068	10.0	2.915
12.0	3.623	11.0	3.108
14.0	4.005	12.0	3.383
15.0	5.312	13.0	3.566
		14.0	3.725
		15.0	5.074

Sp. gr. 1.600, flow time 9.20 sec.		Sp. gr. 1.642, flow time 15.55 sec.	
5.0	0.520	7.5	0.952
7.0	1.672	9.0	1.549
9.0	2.323	11.0	2.097
11.0	2.792	13.0	2.644
13.0	3.311	14.0	2.695
14.0	3.474	15.0	4.152
15.0	4.857		

Sp. gr. 1.650, flow time 11.60 sec.		Sp. gr. 1.662, flow time 19.75 sec.	
7.0	1.202	9.0	1.057
9.0	2.031	10.0	1.474
11.0	2.557	11.0	1.713
13.0	3.010	12.0	2.014
13.5	3.108	13.0	2.243
14.0	3.196	14.0	2.403
15.0	9.055		

Sp. gr. 1.700, flow time 23.50 sec.

Fluid pressure (lb./sq. in.)	Fluid delivery (cc./sec.)
11.0	1.437
12.0	1.734
13.0	1.997
14.0	2.307
15.0	3.771

(3) Measurement of Flow Time

Table II presents the data obtained in calibrating the equipment to determine the volume of fluid being delivered through the gun for slips of varying flow time at various fluid pressures. These data apply only to the equipment and enamel slips used in this investigation. If a gun tip other than a "G" tip were used, the size of the fluid orifice would vary. The pressure drop in the air line would vary with the length and size of the air line used, and with the type of joints and unions in the system. To simplify the investigation as much as possible, all pressures were read at the source and no consideration was given to pressure drops due to friction in the air and fluid lines. Curves were plotted from these data showing constant-pressure lines when the flow time in seconds was plotted against the fluid delivery in cubic centimeters per second. Figure 10 shows the type of curves arrived at by this method. By referring to these curves, the pressure required to give any desired fluid delivery at any given flow time may be predetermined; conversely, the fluid delivery for any given combination of pressure and flow time may be determined.

(4) Effect of Clay Content

A comparison of the atomization photographs indicate that beyond any doubt the degree and uniformity of atomization increases with a decrease in clay content. Although neither sample 4 nor 5 contained any clay whatever, No. 4 had practically no set, while No. 5 had excellent set. A comparison of the atomization photographs between these two indicated little or no difference. Sample plates sprayed with slips of varying clay content indicate that a slightly finer sprayed texture is obtained with the samples of higher clay content.

(5) Effects of Specific Gravity or Water Content

Table III presents the data on variations in specific gravity. Plates, in general, could not be sprayed successfully by this method below a 1.60 specific gravity. The enamel was deposited in too wet a state, causing a considerable amount to flow from the sheet. At specific gravities of 1.50 and 1.55, almost all sprayed samples sagged. Where the balance of any single series obviously would not have produced satisfactory results, no effort was made to complete the series. There was, at all specific gravities, a large amount of orange peel when the proportion of fluid delivered to the amount of atomizing air was high. This orange-peeling tendency decreased with increased atomization. Increases in atomizing pressure gave drier surfaces, better coverage, and generally improved the appearance of the sprayed plate.

Results improved with increases in specific gravity, and the best sprayed plates were obtained at a specific gravity of 1.695.

To determine the quality of sprayed plates at actual fluid delivery rather than at pressures, the fluid pressure at which each plate was sprayed was converted to volume of fluid delivered. Regardless of specific gravity, the best results were invariably obtained when the fluid delivery was approximately 2 cc. per second, together with the necessary atomizing pressure to provide a satisfactory degree of atomization. Further comparison of the results established a minimum fluid delivery of 1.5 cc. per second and a maximum delivery of 2.5 cc. per second for acceptable results.

The atomizing pressure was read at the source. When a pressure gauge was inserted in the atomizing line just ahead of the spray gun, the true atomizing pressure at the gun was found to be approximately 5 lb. less than that indicated at the source.

Atomizing pressures above 25 lb. increased the velocity of the spray to such an extent that the amount of overspray appeared to be excessive.

Table III shows that the most satisfactory degree of atomization, 3, coincides generally with the most satisfactory sprayed results. Based on this observation, it may be concluded that the degree of atomization attained may serve as a satisfactory guide to the quality of the ware sprayed by this process.

Turn to Page 46 for Table III

For those who do not maintain a permanent file of *finish*, we suggest that Part I (June *finish*) and Part II (this issue) be clipped and retained for filing with the remainder of the article, so that complete data will be available.

The rich, ripe red color of plums can be prevented from turning bluish when the fruit is cooked in porcelain enameled ware.

Chicago District Enamelers Club

elects new officers at annual meeting

ALL PHOTOGRAPHS FINISHFOTOS BY STAFF PHOTOGRAPHER

PROFESSOR A. I. Andrews, head of the department, Ceramic Engineering, University of Illinois; C. L. Van Derau, works manager, Electric Appliance Division, Westinghouse Electric Corporation, Mansfield, Ohio; and R. F. Bisbee, manager of Quality Control at Westinghouse, were the featured speakers at the annual meeting of the Chicago District Enamelers Club held at the La Salle Hotel, Chicago, Saturday, May 26.

Ninety-three members and guests attended the luncheon and afternoon meeting.

New officers elected

Principal business for the meeting was the election of officers for the succeeding club year. The nominating committee — consisting of Ralph Foraker, Pemco Corporation, chairman; Fred Doering, Cribben & Sexton Company; and G. G. Hanson, Consolidated Feldspar Corporation— offered a slate covering nominations for the offices of president, vice president, secretary-treasurer, and a new office, assistant secretary-treasurer.

It has been the policy of the group to consider the vice president an understudy to the president and, under normal circumstances, he succeeds to the presidency. A similar policy was suggested by the officers of the group for the secretary-treasurer's post to facilitate the smooth functioning of the office when new officers are elected.

Color and color measurement

In his lecture on color, Professor Andrews emphasized the possibility for simplifying color by breaking it down to only three terms:

1. Brightness.
2. Dominant Wave Length.
3. Purity.

With slides he demonstrated colors for high visibility, low visibility, clashing colors, and how after one has viewed a colored design or object the image remains, even in total darkness. In this connection he said, "We can't trust our eyes. What we see depends to some extent on what we have been looking at previously."

New Club officers

President: W. W. Higgins, A. O. Smith Corp.

Vice President: W. J. Plankenhorn, Federal Electric Co.

Secretary-Treasurer: Dana Chase, *finish*.

Asst. Secretary-Treasurer: George Tuttle, Benjamin Electric Mfg. Co.

Professor Andrews explained the spectrum from the shortest cosmic rays to the longest alternating current rays, and described to some extent the use of the Munsell system of color designation. He gave "down to earth" definitions of such terms as "tri-stimulus values" and "trichromatic coefficients", and demonstrated a method for charting any color by plotting intensity vertically against wave length horizontally. Through the use of a reflectometer he demonstrated the characteristics of specular reflection or "gloss" as compared to diffuse reflection. Included was the demonstration that "diffuse" reflection or "reflectance" as read on a reflectometer takes on the color of the reflecting sample, while a beam of white light, representing specular reflectance, emanates from the same colored sample. A colored light *source*, however, affects both diffuse and specular reflection.

It is Professor Andrews' contention that by breaking color down to its simplest descriptive forms it can be charted and expressed numerically.

Product development system

The product development system, as employed at the Westinghouse Mansfield plant, was extemporaneously discussed by Mr. Van Derau. In addition, he made a number of interesting comments which will interest *finish* readers.

He outlined the tremendous task of a company such as he represents in changing over from peace time production to war production. (The company has produced over 72 separate lines of war products.)

Mr. Van Derau believes that the

President Higgins.

Vice President Plankenhorn

President Higgins smiles with approval as two men from Granite City, Illinois, register. They are Martin Fisher and George Foehse of National Enameling & Stamping.

"That wasn't so funny," says newly elected assistant secretary-treasurer, George Tuttle, to F. A. Petersen, U. of I., and R. S. Sheldon of Frigidaire, Dayton, Ohio.

Indiana in a huddle with Ohio, in the persons of Arol Hall, Globe American, and Claude Cleghon, Clyde Porcelain Steel. Leo Goldberg of Harper J. Ransburg looks in from the corner.

This roundup includes "Cliff" Andrews, U. of I.; R. P. Stevens, ACS Chicago Section chairman; R. L. Cook, U. of I.; and the three musketeers, Tuttle, Sheldon and Petersen.

wise manufacturer will go back into production with much the same plant procedure as used before the war. "Industry is doing everything possible," he said, "to expand its business to 'soak up' the tremendous labor supply." To do this he believes the manufacturer should not "grab" every new idea, but should plan to get back into production "quickly"—then, and only then, should he give proper recognition and consideration to radical processing changes.

He commented on the splendid job done by the enameling industry in war work, and mentioned the attention the industry is giving the competitive products such as plating, synthetic finishes, plastics, aluminum, etc. This "keeping the eye on the other fellow" is true of the manufacturers of all these products.

In referring to war time production he said, "We have learned to do a better job and to throw out 'slap stick' methods. If we had applied the same energy and careful inspection of products in peace time, results would have been comparable. We won't drop this habit of 'doing a job' which is now so deeply rooted."

In commenting on enameling plant reconversion he said, "We can't expect men who have been off the enameling job three and one-half years to produce as efficiently when first back on the job. A retraining program is essential.

"Let me say again, developments must come in by the slow process and be proved and re-proved before they are put in production. We are going back into production as we left it and improve as we can — let the new things come in as they can."

Sixteen steps to the finished product

In a sequel to Mr. Van Derau's discussion of product development, Mr. Bisbee gave an illustrated talk outlining the sixteen steps that a new product must take at Westinghouse from the time of its inception until the time that production actually starts. Said Mr. Bisbee, "One of the major problems confronting all manufacturers is the development of new or changed products when they first

go into production. This is especially true in the electric appliance business where models change at least once a year."

Major appliances are highly competitive, which means quality and cost must be kept under strict control. Production must flow without interruption right from the start. To accomplish this, product development must be ironed out first. The new product development system at Westinghouse requires team-work on the part of the entire organization — Sales, Engineering, Manufacturing and Quality Control Divisions.

Each have their part in the picture some place in the sixteen step program where they can be heard on every detail and the benefit of their experience incorporated at the development level.

If properly set up and followed, with the whole-hearted backing of management, such a system will result in:

1. *Less development* on the production line.
2. *Increased production* at the start.
3. *Higher quality* at the start.
4. *Lower costs* at the start.
5. *Complete understanding* between all interested departments at the start.

Out-of-towners present

A number of out-of-towners, several of whom had other pertinent business in the city, were present at the Club's annual meeting. Included were enamel industry members from Pittsburgh, Pa.; Clyde, Ohio; Granite City, Illinois; Dowagiac, Michigan; Kokomo, Indiana; Kendallville, Indiana; Oshkosh, Wisconsin; Dayton, Ohio; Toledo, Ohio; Fort Wayne, Indiana; etc.

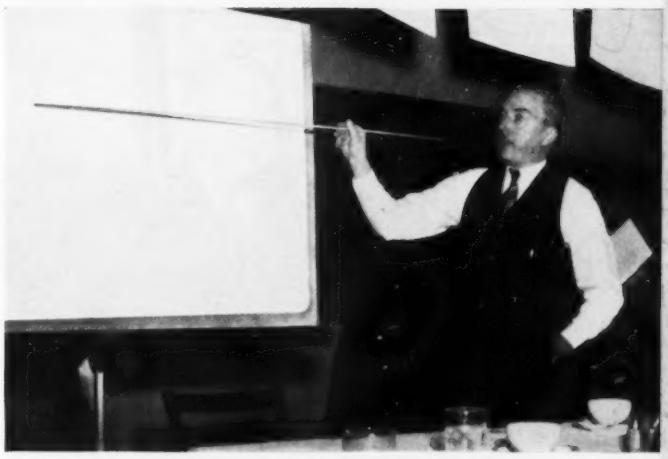
We noticed that R. P. Stevens, chairman of the A.C.S. Chicago Section was present.

The visitor from the greatest distance was Armando Ruiz Galindo, Distribuidora Mexicana, Mexico, D.F., who is currently attending Northwestern University.

A successful year

In reviewing the progress of the Chicago District Enamelers Club for

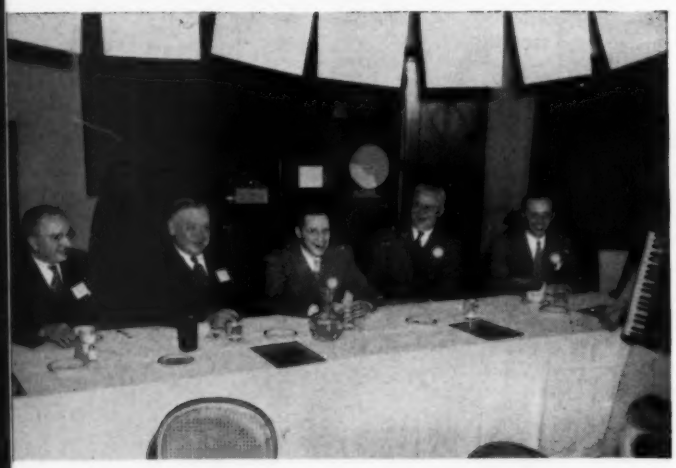
Pittsburgh is represented by three men from the O. Hommel Company organization — Louis Martin, Herman Cook and Ernest Hommel.



Ralph Bisbee says "Where is my chart?" as the flash lamp erases it from the screen during his presentation.

Here's Arol Hall from Kokomo with Ferro Enamel's Jerry Hofstetter and Leland Honeywell of Round Oak, Dowagiac.

Fred Sutphen of Armco explains the details to Norbert Schroeder and Tom Stoneburner of McCray Refrigerator, Kendallville.



At the speakers' table are Ralph Bisbee, C. L. Van Derau, retiring president Howe, Professor Andrews and incoming president Higgins — plus part of the entertainers accordian.

"Turn off the lights," say Bisbee and Van Derau as the camera man insists on a picture of the visiting speakers from Mansfield.

"In a huddle" are camera shy Fred Doering of Cribben & Sexton and Inland Steel's Frank Porter — must be a weighty problem.

This uncomplimentary photo includes Professor Andrews, Ralph Foraker of Pemco and Professor Andrews' father, a club visitor.

the Club year just closed, it can be said that the Club has completed one of its most successful years in spite of the war-time conditions.

The Chicago Club is fortunate in this respect, as compared to the Eastern District Enamelers Club or the Central District Enamelers Club, in that a greater number of enamelers are within the "Chicago area" and can readily attend meetings through the use of "local transportation facilities. In contrast to this, the Eastern and Central Clubs include enamelers whose plants are widely scattered and were, therefore, more seriously affected by the ban on transportation.

Higgins compliments retiring officers

In taking office as president, Waldo Higgins complimented the officers and committee chairmen for their respective work in contributing to the success of the Club. He commended President Howe for his able handling of the Club meetings; Program Chairman Plankenhorn for the quality of programs presented during the year; Membership Chairman Deringer for his business-like handling of the membership program; and Publicity Chairman Hofstetter for increasing activity of a publicity nature.

Club shows steady growth

In spite of the retarding factor of war work, the Club increased its paid membership during the past year by about 50% over the average for previous years. Indications point to a much larger membership as soon as many of the enamelers who have been prevented from attending meetings by six and seven-day work weeks are back in their former positions.

No announcement has been made as yet in regard to a schedule of meetings for the forthcoming year. President Higgins reports that committees will be appointed soon and a meeting of the officers held so that plans can be announced in the very near future.

The Club has already received sixty-one paid memberships for the new Club year.

Norge to build laundry equipment at new Herrin, Illinois plant

Negotiations are nearing completion for acquisition of a factory site at Herrin, Illinois, and if the transaction is consummated, the Norge division of Borg-Warner Corp. will concentrate all laundry equipment manufacture there as soon as a plant can be constructed on the property, it was announced by Howard E. Blood, president.

Mr. Blood explained that the contemplated acquisition marks another major step in a comprehensive program of plant decentralization, "deemed necessary to permit the company to meet its announced postwar objectives of high employment, efficiency, and volume in each of its factories." Last fall, the company announced the purchase of a plant in Effingham, Ill., for electric and gas range output, and the intention to streamline each of its plants for single-purpose, straight-line production. Muskegon and Muskegon Heights, Mich., factories will manufacture electric refrigerators and develop new products.

If the Herrin site is acquired, construction of a factory will be started as soon as materials are obtainable, which the company hopes "will be in the near future," Mr. Blood said. "Once started," he continued, "we'll expedite fabrication and machinery installation so that we can begin filling our large accumulated order backlog at the earliest opportunity." Given prompt priority assistance in material acquisition, Norge can begin building washing machines in a few months, he predicted.

It is reported that J. A. Leighton has resigned his position as chief engineer at Cribben and Sexton Company, Chicago, Illinois.

Four sessions of DeVilbiss school reserved for industrial finishers

The DeVilbiss Company, Toledo, Ohio, will hold four one-week courses for industrial finishers in the second half of its 1945 School of Spray Painting. Sessions starting July 16th, September 17th, October 15th and December 10th, each covering the same classroom instruction and shop work, will be free to users of DeVilbiss Spray Painting Equipment.

The company asks that industrial finishers write for reservations in any class at least two weeks in advance.

General Electric announces plans for new research laboratory

A new building for the General Electric Company's Research Laboratory, which will afford some 50 per cent more space than present facilities provide, will be erected in suburban Niskayuna, near Schenectady, New York, at a cost of $8,000,000, it was announced by President Charles E. Wilson. Construction will begin as soon as WPB approval can be obtained.

The new building, in the general shape of the letter "T", will vary from two to five stories in height and will include 200,000 square feet of laboratory working space in addition to an auditorium seating 300, a dining room, conference rooms, etc. One-third of the laboratory space will be devoted to service facilities, machine shops and specialty shops such as glass blowers, all in a convenient central location.

The Board of Directors of Philco Corporation declared a dividend of twenty cents (20¢) per share of common stock payable June 12, 1945, to stockholders of record June 1, 1945. The previous dividend was twenty cents per share paid March 12.

Dadisman highlights sales and distribution before Philadelphia District of P.M.I.

Postwar marketing problems and new selling techniques were discussed by Ray Dadisman, manager, Market Development Division of American Rolling Mill Company in an address before the Philadelphia District meeting of the Pressed Metal Institute held at the Engineers Club Tuesday evening, May 29.

Stressing the importance of sales and distribution in reconversion, Mr. Dadisman pointed out that the problem of reconverting plants to peace time production seriously affects only about 20% of all manufacturing plants in the country, whereas markets and marketing reconversion are vital problems confronting every business, especially those making durable goods.

Mr. Dadisman said in part: "The stamping industry, like the steel industry, depends upon the activity of manufacturers who make products for domestic and industrial use. Before the outlook for steel and pressed metal can be judged, therefore, the market possibilities for stamping cus

tomer products must be appraised. For most stamping producers sales and distribution represent their only major reconversion problem.

"Distribution was a principal problem before the war and will be a greater problem postwar in view of increased production capacities. In addition to the fact that production efficiency has always been far in advance of marketing efficiency, our national productivity has jumped 60% since 1940 with a tremendous share going to a single customer — Uncle Sam.

"The ability of business to reach and maintain high levels of activity after the war will depend to a large extent upon effective marketing. Up to the present time production has received the lion's share of scientific research and development. In the future a change in emphasis will be necessary.

"Planning a marketing program should take into consideration an analysis of markets that the individual company is in a position to serve profitably, bearing in mind competition, freight rates, labor rates, individual item profit and distinctive features which make a particular product preferable even at a higher price. It will be important to investigate entirely new outlets as many concerns will be in the stamping market for the first time, postwar. Many opportunities will also result from close cooperation with management engineering firms and industrial designers.

"A survey to determine what prospective customers need or want is particularly important at this time.

"Management executives must spend more time on sales and distribution problems. Salesmen will require more training, and advertising will play a much more important role in the development of new customers."

In conclusion Mr. Dadisman, commenting on postwar markets, said that in his opinion volume of sales would depend to a very considerable extent on marketing plans executives make now, and that these plans should be broad scale and ready for immediate use when the green light flashes.

W. C. DeMaris of Heintz Manufacturing Co. presided. More than one hundred local stampers were in attendance.

Upton predicts annual washing machine market 50% over 1941

THE multi-million dollar household washing machine industry, which has placed its products in more than three-fifths of the wired homes in this country, envisions an enlarged market promising annual output that will top its record year, 1941, by 50 per cent, according to a spokesman for the American Washer and Ironer Association.

"We will hit new highs as quickly as the industry can get rolling in dead earnest," said Louis C. Upton, head of the Nineteen Hundred Corporation, St. Joseph, Mich., and president of the Association.

"The 'go-ahead' signal, given recently by the War Production Board's removal of all restriction on materials, facilities and manpower, not only for washers but also for driers and ironers, the companion household cleanliness equipment, means resumption of output by an industry which in 1941, its last full production year, turned out more than 2,300,000 units with a total retail value close to $175,000,000," Mr. Upton said.

Simultaneously he gave warning that "the American housewife, who has kept her washing equipment going through thick and thin during the war period, must not expect replacements for her wornout appliances by tomorrow noon."

"The WPB proposed level of manufacture, 350,000 washers each in the third and fourth quarters of this year, is a gratifying figure to aim at, but output is dependent on ability of the industry to obtain materials without interfering with their use for war purposes," Mr. Upton said. "It will be three to six months before the industry as a whole is rolling out washers, ironers and driers in quantities that will be really noticeable in the stores."

Estimates of the pent-up demand for washers range as high as 5,835,000, according to well informed sources. The immediate market for ironers is placed at 1,300,000.

O. Hommel organizes new division

The O. Hommel Company, Pittsburgh, Pa., has announced the organization of a Chemical and Equipment Division.

The announcement states that the Division has been organized around men who have had years of experience in this field, with James F. McCrory as division head. Mr. McCrory has been associated with the chemical industry for many years.

Charles F. McGovern

Charles F. McGovern is also associated with the newly organized division. Following service in the U. S. Navy in World War I, he went to work for the American Cyanamid and Chemical Corporation in their New York office and was later transferred to the Pittsburgh and Cleveland offices. After 17 years as sales representative with the American Cyanamid and Chemical Corp. he joined the Chemical and Equipment Division of O. Hommel.

This new Division will act as sales agents for principal manufacturers of chemicals, oils, and specialties used in the ceramic, paint and gen-

eral industrial field. They will represent builders of grinding mills, agitators, mining equipment and tanks, according to company spokesmen.

Prelude to Frigidaire home freezer

A *finish* reporter attended the press and radio preview of "Keep It Frozen," sponsored by the Frigidaire Division of General Motors Corp., at the Drake Hotel, Chicago. This was a colored slide presentation, with Verna L. Miller, Frigidaire's director of Home Economics, as narrator.

The research work that Frigidaire has done in connection with home freezing was colorfully presented and evidence offered on the effective use of quick freezing for the preservation of innumerable foods, ranging from fresh strawberries to pies, the latter either baked or unbaked. Data was offered on the number of months that various types of foods will keep perfectly when quick frozen. Methods of preparation, wrapping and packing were illustrated.

The thoroughness of this work, and the introduction of the subject by this method, would indicate that Frigidaire is going after the home freezer market in a big way.

P. M. Kettenhofen dies

Word comes from Malleable Iron Range Company, Beaver Dam, Wisconsin, of the passing of P. M. Kettenhofen, purchasing agent for the company during the past thirty-nine years.

Mr. Kettenhofen died on May 7, following a cerebral hemorrhage which he suffered three days prior to his death. The report indicates he had been in failing health for the last six months.

Mr. Kettenhofen was employed by the A. J. Lindemann & Hoverson Company, Milwaukee, prior to his joining the Beaver Dam company.

Second production star for Charles Lennig & Co.

The War Department has announced the award of the second production star to Charles Lennig and Company, Inc., of Philadelphia, a subsidiary of the Rohm and Haas Company. This makes a total of eleven awards to the companies comprising the Rohm and Haas group — one E award and three stars to the parent company; an E award and three stars to The Resinous Products and Chemical Company; and the E with two stars to Charles Lennig and Company, Inc.

Products manufactured by the Lennig Company for the armed forces include chemicals for high explosive shells; "hypo" used for photographing V-mail; other photographic chemicals; an antiseptic for the Navy; synthetic rubber accelerators; sulfuric acid for storage batteries for planes, tanks, ships, and other mechanized equipment; and an anti-fungus ingredient for ship-bottom paints.

Ruthenburg on "Your America" program

Mr. Ruthenberg, right, with Lyle DeMoss, producer of "Your America" program.

THE "Your America" radio program, which is broadcast every Sunday by the employees of the Union Pacific Railroad Company from the Company's headquarters in Omaha, Nebraska, has on more than one occasion featured speakers representing industries important to porcelain enameling. (See page 37, May 1945 *finish*. — AWIMA president on "Your America" program).

One of the recent coast-to-coast programs carried a salute to the refrigeration industry, with Louis Ruthenberg, president of Servel, Inc., as the guest of honor and featured speaker.

During his talk on the program, Mr. Ruthenberg reviewed the many miracles of modern refrigeration which have contributed to higher standards of living, and traced recent developments which have speeded the war effort. He said, in part:

"Our boys in uniform, scattered all around the world, were served old-fashioned Thanksgiving dinners, replete with turkey and all the trimmings. These turkeys were raised on American farms, killed, and dressed weeks ahead, carried in refrigerated railroad cars, loaded on refrigerated ships, unloaded in refrigerated trucks for delivery to army field kitchens where they were stored in portable refrigerators to await Thanksgiving day.

"But," he continued, "the refrigeration industry has gone to war in other ways. We all know of the wonders of blood plasma transfusions; literally thousands of wounded men, therefore, have had their lives saved by refrigeration.

"Even the production of certain war equipment," he added, "is dependent on the industrial application of refrigerating machines.

"The manufacture of household refrigerators was terminated a few months after Pearl Harbor and none has been produced for three full years. Our industry has turned to making aircraft wings and engine parts and

cartridge casings and other war material. The demands of war have, in fact, caused a much larger volume of production and a great increase in the number of factory workers.

"This leads me to comment," he said, "about the prospects of post-war employment for these thousands of workers. It is a challenge to management which we have accepted as a social responsibility.

"My own company, for one, has plans to employ nearly twice as many workers as before Pearl Harbor. We expect to produce and sell more home refrigerators than ever before."

"Port" Wheeler awarded silver star

According to the Piatt County Republican of Monticello, Illinois, word has been received from the 81st "Wildcat" Infantry Division in the Pacific that Major P. M. Wheeler, Jr., of a field artillery battalion, had been awarded the Silver Star for gallantry in action on Angaur Island, Palau Group, Sept. 18, 1944.

We quote the paper's report:

"His battalion had been ordered to support the infantry in its attack, but because of dense foliage and lack of high ground it was impossible to observe the registration of the battalion. Major Wheeler, realizing the importance of registering the battalion without delay, volunteered to climb a high tree and with the utter disregard for continuous enemy sniper fire, remained in his exposed position atop the tree until he could complete registration of the battalion.

"Port" was formerly on the technical-service staff at Chicago Vitreous Enamel Product Company, Cicero, Illinois.

"Sink bomb" for the Japs

COURTESY YOUNGSTOWN KITCHENS-MULLINS MFG. CORP.

At last some one "included" the kitchen sink. The precedent busting boys of the Southwest Pacific Air Force decided to change the adage about "dropping everything but the kitchen sink." They dug up this old fashioned sink, rigged it into the bomb-bay and let it fall along with their bombs onto the "dirty" Nipponese.

Australians visit U. S. enameling plants

Two recent visitors to the offices of *finish* were S. H. Dunstone and T. B. Simpson, left to right in the accompanying photographs. Both Mr. Dunstone and Mr. Simpson are members of the organization A. Simpson & Son Ltd., Adelaide, South Australia.

Unlike American plants, which are for the most part designed for straight line production of specialized products, the Simpson plant manufactures a wide variety of products ranging from kitchenware, reflectors, stoves

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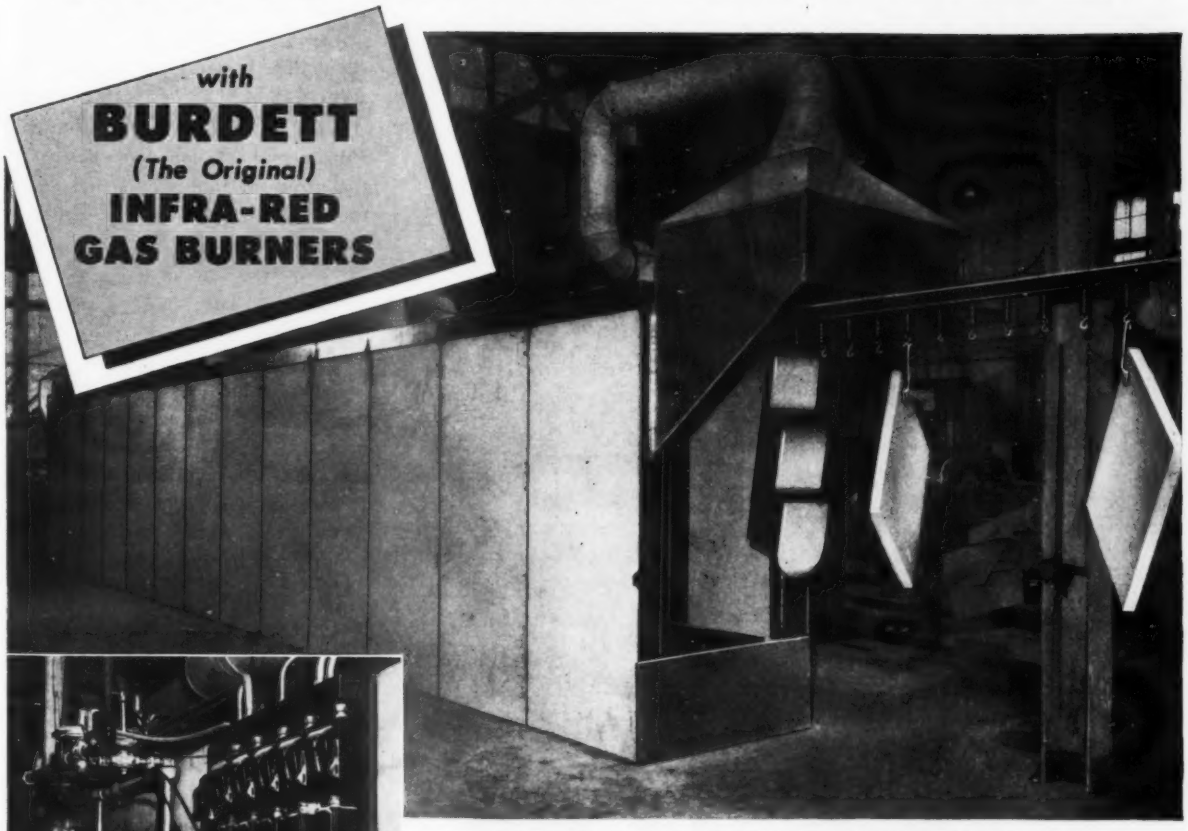
FINISHFOTOS

Porcelain Drying Time Reduced from 30 MINUTES to 4 MINUTES

with
BURDETT
(The Original)
INFRA-RED GAS BURNERS



• Burdett "Infra-Red" Drying Oven in the plant of Atlas Enameling Co., St. Louis, Mo.

• This control set-up is typical of Burdett installations.

Interior view of the Atlas oven showing Burdett "Infra-Red" Burners and recirculating system ducts.

In porcelain drying, as in other types of heat processing, Burdett "Infra-Red Principle" Gas Burners are producing revolutionary results. Using the installation of Atlas Enameling Company as typical of Burdett performance, we quote this user. "Where we used to require thirty minutes drying time in our steam oven, we now are able to dry our material thoroughly, in your oven, in from three to four minutes" and "This type of heat does not skin dry the material, it is very uniform throughout, and gives us an excellent finished product." The oven illustrated operates at 400° to 450° F. Gas consumption, with oven fully loaded, is approximately forty cents per hour. These unusual results are common in Burdett installations —one reason for the wide acceptance by leaders in all industries. Ask to have a Burdett engineer analyze your heat process and show you how you can enjoy these savings in time, material and fuel costs.

45 N. Loomis Street, Chicago 7, Illinois

BURDETT MANUFACTURING CO.
Infra-Red Gas Burners

→ *from Page 32*

and other enameled products to bottle tops, tin cans and steel drums. With a total population of only 7,000,000, Australia can not support the straight line, high production industries common to the United States.

Mr. Simpson and Mr. Dunstone have been visiting plants, including the leading enameling plants in the U.S., while on their tour.

Frigidaire man killed after helping raise Iwo Jima flag

Frigidaire employees are dedicating their current purchase of war bonds to the memory of Franklin R. Sousley and other members of their organization who have met death on the field of battle in this war.

Photographer Rosenthal's famous picture of the flag raising at Iwo Jima shows Marine Sousley, extreme left and insert, a young employee at Frigidaire prior to his enlistment in the Marine Corps in May 1944, helping raise the flag.

Sousley, a Kentuckian, was just twenty years of age when he met his death.

BUY MORE WAR BONDS

Products of Tomorrow Exposition being planned for Chicago

America's first annual "Products of Tomorrow Exposition" is being planned for an opening on January 18, 1946, subject to military exigencies. Due to the magnitude of this first Exposition considerable time must be spent in preparing and planning.

Chicago is an ideal location for such an event because of the accepted fact that even under tight transportation conditions its location and facilities cause the least strain on transportation of any place in the nation, as well as the fact that most of the buildings to house the exposition are already up and ready to be occupied with the minimum amount of construction required, and that too is already provided for. These facilities ready for use include the Chicago Coliseum, the North Hall Exhibition Bldg., the Armory and the Administration Bldg.

Gardner Displays Company of Pittsburgh has completed a design for the group of buildings centering on the Chicago Coliseum, according to an announcement from exposition headquarters.

Exhibitors will have few restrictions on the design of their displays. They will be encouraged to go the limit in originality and effectiveness. Many of the exhibitors' displays are expected to set new styles because they will be encouraged to make effective use of approaches through all of the five senses, (the five windows to the mind) sight, sound, touch, taste and odor, in driving home to the individual the merits of their products.

The "Products of Tomorrow Exposition" will comprise two main divisions, consumer and industrial products, with the addition of others as the demand requires. Plans are complete for the use of a million square feet to accommodate every one with a product to introduce.

According to plans reported, the "Products of Tomorrow Exposition" will be an annual event to provide a springboard for the introduction of new products and new designs by all industry.

Traffic flow and crowd engineers estimate that 35,000 people per day can be handled with the facilities available to the Exposition. It is to be kept open as long as the weekly attendance warrants it.

Look to the West says Conlon executive

I. N. Merritt, vice president and general manager of the Conlon Corporation, Chicago, revealed that the concern's distribution setup has been perfected first for the South and the area from the Mississippi river to the

to Page 46 →

VITREOUS ENAMELING

simplified in production and *reduced* in cost by this

new Titanium Steel

ADVANTAGES

THE use of Titanium steel offers the listed advantages to the Vitreous Enamel Industry. These advantages have been proved in laboratory and plant operation where the recommended practice covering nickel flashing, pickling and enameling has been followed:

1. Elimination of enamel boiling due to steel defects.
2. Elimination of conventional ground coat.
3. Elimination of copper heading.
4. Improved sag resistance.
5. Improved resistance to warping.
6. Excellent deep drawing qualities.
7. Use of conventional cover coats directly on metal.
8. Resistance to hydrogen penetration or absorption.

The benefits you derive from these advantages are: Lighter enamel weights and coats... reduction of chippage and mechanical breakage losses... increase in production efficiency through reduction of re-work and re-operation... sharply improved thermal shock resistance of white enamel, due to thinner enamel thickness... overall cost reduction for enameled ware... increase in production speed. Even when a ground coat is used this NEW Titanium Steel for Vitreous Enameling brings important manufacturing cost reductions.

Manufacturers of both steel and enameled products may obtain complete factual technical data from a member of our Technical Staff, or by mail. Consult your steel supplier on deliveries.

Pending patent applications on the new enameling process and product made thereby are owned jointly by Inland Steel Company and The Titanium Alloy Manufacturing Company under Trust Agreement.

THE TITANIUM ALLOY MANUFACTURING COMPANY

Executive Offices: 111 BROADWAY, NEW YORK, N. Y. *General Offices and Works:* NIAGARA FALLS, N. Y.

The Washington round-up

By Wilfrid Redmond

THE outlook for enamels did not show improvement after VE-Day, mainly because cutbacks did not come immediately, nor in fact, as rapidly as WPB had anticipated. It now appears that cancellations and other release of military materials will not begin to have an impact until about mid-July.

However, all indications are that chemicals for industrial finishes will be available only in limited quantities in the foreseeable future because, as far as coatings are concerned, requirements for the Pacific war have been stepped up, cancelling out any reduced demand resulting from the end of the European conflict. Requirements for smokeless powder and insectifuges have risen sharply, and because of the higher humidity in the Pacific theatre, a higher type of specification for protective coatings will be necessary. Phthalic alkyd resins are expected, therefore, to remain in tight supply for some months and only limited quantities will be available for the reconversion program.

Only 507,641 pounds of alkyd resins were allocated for the most essential civilian uses during May, of which, 52,272 pounds went for laundry, kitchen and refrigeration equipment, and 39,237 for containers, packages, and accessories.

A small amount of antimony oxide was made available, mainly for stoves and refrigerators for Federal housing projects in May. It represented a minute percentage of requests. WPB officials say they cannot open up on allocations because oxide production has dropped to an extent not compensated for by cutbacks. Oxide output has not held up because metal production has receded. If labor difficulties improve, and there is some indication that they may do so, metal production may show an increase which will be reflected in a slightly better position for antimony oxide and other antimony chemicals, but priorities will go to manufacturers who have Federal contracts.

All revocations and announcements by WPB that civilian production may be started, have been conditioned upon the availability of materials. Programmed items will get steel and materials for coatings before unprogrammed items.

WPB Chairman J. A. Krug recently told the automobile industry they could "get going" on passenger car production and a quota of 214,000 cars was assigned for the remainder of 1945. At the time of the announcement it was anticipated that 500,000 tons of free carbon steel would be available for the third quarter, but it now appears that very little of this amount will be released to the industry or any other unprogrammed production.

Early in June, WPB was faced with the probability that the open-ending of CMP July 1 would mean an empty cupboard as far as sheet and strip steel is concerned because of new programs and mounting requirements for the military, so an order was issued advancing the date by which steel warehouses must cancel orders placed on steel mills for sheet steel, in excess of recently established third quarter quotas, from June 30, 1945 to June 16, 1945. This will enable WPB to get a better picture as to the open space on mill rollings, and enable warehouses who have not been able to place orders for their full third quarter quota to do so.

Bathtub production up

Bathtub production will go well over the 50,000 mark in the third quarter and new production in sinks and lavatories is also scheduled. June production of tubs went about 12,000 over estimates. The American Radiator Company in Baltimore, opened production in June with 8,000 units as a result of the transfer of a military castings contract to the company's Pittsburgh plant. If the War Manpower Commission will permit the necessary labor allotment, the Baltimore plant is expected to produce 25,000 tubs in the third quarter. Production will also be started in lavatories and sinks. Standard in Louisville is expected to go from 10,000 to 25,000 units in the third quarter. The Kohler Co. turned out 4,500 additional units in the second quarter for a total of 14,500, and may go to 20,000 in the third quarter. The Kohler Co. started production of lavatories and sinks in June. The Eljer Co. is expected to produce 15,000 tubs in the third quarter but will not get into lavatory and sink production until later.

WPB's Plumbing and Heating Division sees no prospect of steel tubs for the third quarter although an effort will be made to get a firm allotment. Some improvement in the sheet steel situation may come late in the third quarter from the reconversion of steel plate mills to sheet. An order is now in process to effect this transfer.

The Plumbing and Heating Division has made a move for plating materials for brass goods. With the open-ending of CMP for brass mill products in June, production can now be accelerated, so the Program Bureau of WPB has been requested to consider the release of some nickel and chrome for plating.

Bright work permitted for stoves

WPB has revoked L-23-c which prohibited the manufacture or assembly of bright work and accessories for non-electric domestic cooking and heating stoves. The order prohibited the use of any finish or trim containing copper, nickel, or chrome in the production of stoves. Bright work and accessories can now be manufactured if the raw materials can be located. Nickel and chrome are as tight as they have ever been and are not allocated for non-functional uses.

Refrigerator production resumed

A third quarter program for the production of 265,000 domestic mechanical refrigerators has been approved by WPB and L-5 which restricted production has been revoked.

Production will be resumed subject to assignment of specific authorization to manufacturers by WPB. The amendment to L-5-c is for the third quarter only.

All of the refrigerators which can be made in the third quarter are expected to be added to the frozen stockpile and will be released only for the most essential civilian requirements. Quotas will be assigned to manufacturers, based upon ability to produce and manpower availability. Small manufacturers generally will be authorized to produce to a greater share of their capacity than larger ones.

Manufacturers can undertake production in excess of authorizations under the spot production plan, Priorities Regulation 25. However, they will receive no priority rating for this production. WPB will issue allotments of controlled materials to manufacturers for the production of replacement parts, and will assign an AA-1 preference rating for materials and components to produce them.

L-7-c revoked

Limitation Order L-7-c, controlling production of domestic ice refrigerators has been revoked, effective June 7. The quarterly authorization for the production of 75,000 refrigerators will remain in effect for the third quarter, and materials and priorities assistance have been assigned to manufacturers for this number of refrigerators. Quotas have been assigned to individual manufacturers.

Revocation of the order means that manufacturers may produce refrigerators in excess of their quotas if they can get the materials. Manufacturers who obtain materials without priorities assistance are not required to obtain manpower clearance but those who are located in Group 1 or 2 labor areas and who employ more than 100 workers, and are receiving priorities assistance for increased production, must obtain clearance.

WPB estimates that 17,000 jobs will result from the authorization to produce 265,000 domestic mechanical refrigerators in the third quarter.

Washing machine production authorized

The same pattern has been followed for washing machines as for refrigerators. Limitation Order L-6 has been amended to permit resumption of production to the extent of 350,000 units for the third quarter. Production over and above the permitted program has been granted but manufacturers will have to compete on the open market for materials for this ex-quota output.

Ironers and driers, which were subject to the order, may now be produced, but on the basis of availability of materials. No priority assistance will be granted for these items.

Manufacturers of washing machines will be granted priorities assistance to produce a share of the 350,000 washers on the basis of ability to produce and availability of manpower. An AA-3 rating will be assigned for materials. New producers will be equally considered in the allocation of materials.

WPB warned if distribution of washing machines is not done on an equitable basis, the agency will assume distribution control.

Labor clearance is not required for machines produced in excess of quota. Plants employing more than 100 workers in Group 1 and 2 labor areas must obtain clearance for quota production.

WPB warned, that because materials and components may not be available in balance, that is, at the same time, the general public may not expect to see domestic laundry equipment on the market until late in 1945.

Officials estimated that 350,000 washing machines should mean 8,000 jobs in the third quarter.

Table top production doubtful

WPB recently made the cautious announcement that porcelain table tops will not be available in any substantial quantity this year. Production will be limited by continuation of war orders, manpower shortages in many areas where plants are located, and the tightness of the sheet and strip steel situation.

It is unlikely that any sheet or strip steel will be available in the third quarter for table top production, since this is not a programmed item. However, manufacturers may place orders now for CMP materials. The Controlled Materials Plan will be open-ended July 1, and if materials are available they can be purchased without priorities assistance. Brass mill products have been open-ended and deliveries can be accepted now.

Manufacturers may make experimental models of tables as specified in Priorities Regulation 23. The experimental models cannot be used for sales promotion but they may be displayed.

Enameled ware production opened up

WPB has revoked Limitation Order L-30-b which restricted production of enameled ware to 70 percent of the iron and steel used in the year ended June 30, 1941. Manufacturers are freed from these restrictions and may produce to the extent of their ability to obtain materials. Orders may be placed for delivery of materials at the mills after July 1, when CMP is open-ended. If steel is available over and above CMP allotments for authorized programs, it will be sold on the open market. Third quarter availability of carbon steel sheet is problematical, but Chairman J. A. Krug of WPB is optimistic about fourth quarter production of the unprogrammed items. The full effect of cutbacks should be felt at that time.

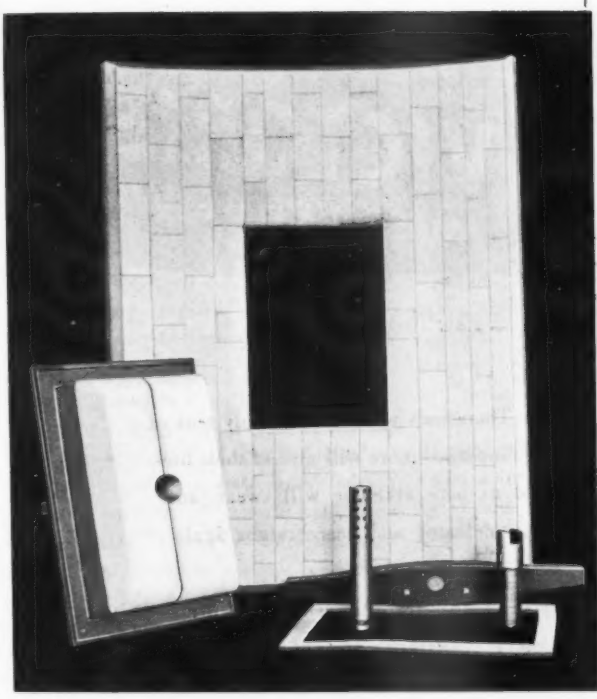
PRESS TIME BULLETIN

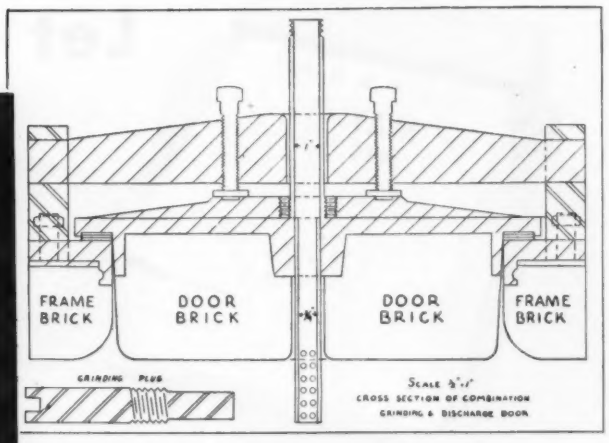
ENAMELED UTENSILS — Increases in enameled ware (utensils) production are not expected for some time, even though L-30-b has been revoked, because light gauge steel sheets will be available only for programmed production, WPB recently told the Porcelain Enameled Ware IAC.

Steel allotments for the third quarter have been issued to manufacturers to provide for about the same level of operation as in the first quarter. Advance allotments that have been issued by WPB, though still valid, may be withdrawn at some later date, when materials are more readily available.

Officials doubt that manufacturers will be able to obtain delivery of sheets in the third quarter without allotment, even though they are now permitted to place their orders.

The necessity of meeting urgent military requirements for antimony and antimony compounds will continue to limit the supply of these materials for civilian purposes, and the present system of allocating antimony for all requirements will undoubtedly be continued for some time, WPB officials told the committee.





Drawing of the mill head assembly, showing position of unloading plug and the protection afforded by the adjoining door brick and frame brick.

Lined section of a ball mill shown with the components of the mill head assembly. Note simplicity of design and sturdy construction.

DO *YOUR* MILLS HAVE THIS PROTECTION?

Your mill linings may be in perfect condition, but if your mills are not equipped with McDanel mill head assemblies your enamel doesn't have complete protection against iron contamination. In addition to adding positive protection, many plants have speeded mill room production and lowered mill room costs by installing this exclusive McDanel unit.

Simple in design, sturdy in construction, easy to install — with this unit on all your mills there will be no more grinding on metal at the unloading door.

The feature which speeds production is the unique unloading tube which replaces the "grinding plug" and makes it unnecessary to disturb the mill head when removing the batch. Ideal for "pressure" unloading.

If your mills are not equipped with this assembly, you will find it to your advantage to investigate at once.

McDANEL REFRACTORY PORCELAIN CO.

BEAVER FALLS, PENNSYLVANIA

Chicago Vitreous Enamel Product Company • Exclusive representatives for the enameling industry.

McDANEL MILL LINING BRICK

Let Us Not Forget!

In the Pacific Thousands will die. Probably tens of thousands more will give of their life-blood. Certainly millions of us here at home will sweat, and sweat plenty, before Japan is defeated and peace reigns again in the world.

To speed that day—to help in whatever capacity we can—is the ambition and objective of every American. And of business organizations, such as our own.

We here at Ferro are still very much in the war. And we'll continue to produce incendiary materials and bombs, and smoke mix powders and smoke pots, as long as they're needed to help crush Japan. (Incidentally, Ferro is the world's largest producer of most of these items.)

..in America ***(after the war)*** Recent WPB releases, on $100,000,000.00 of machine tools for civilian goods production, mark the "opening guns" of still another battle. A battle we must win, and win decisively, if our other victories are to mean anything.

Prompt reconversion for Peace, while vitally important, will not in itself bring Victory. We must plan and prepare for an enduring "economy of plenty"—based on more and better products, more efficiently produced and much more widely distributed among our people.

We of Ferro are preparing to do *our part* in winning this third Victory—by providing better and better products, and an even more outstanding engineering service; by continuing to pioneer both in technical research and in the development of new markets for *our customers'* products.

FERRO ENAMEL CORPORATION, CLEVELAND 5, OHIO

From the Editor's mail . . .

Camp Elliott
San Diego 44, California

Dear Mr. Chase:

This may well be one of the silliest questions of the year. If so, ignore it.

Permit me to introduce myself. At present, in spite of my rate, I am the editor of my outfit's weekly paper, The ISLAND "X" PRESS, an 8-page mimeographed Naval publication. I expect to ship overseas some time soon.

In civilian life I am an advertising copywriter in the advertising production department of the St. Louis Globe-Democrat. I have been with them a number of years. Also, in civilian life, I am a home-owner. I still own that home and my personal post-war plan includes selling it just as soon as I see what "the score" is after the war. Then I plan to build or buy a better home in a better location.

Today a copy of your magazine, "*finish*," dealing with the ceramic finish industry, came to my desk. I don't know how — or why. Certainly I have never had any contact with the industry. But I thumbed thru it, read the interesting and provocative article, "The Machine Age" by Geoffrey Morgan, looked at the advertisements — and an "idea" was born.

The idea I sum up in this question: "Why, in this future world of ours, couldn't America build homes using porcelain enamel finish exteriors?"

My present home is frame. That means constant repair and repainting.

What opportunity—for a firm with the vision of, say, a Kaiser — for a revolution in home construction, long needed, the use of such material for exteriors presents! I'd like to have your re-action — and the re-action of anyone in the industry who might be amused or interested in the idea.

Signed: C. M. Schwarz, PhM3c

We wrote Mr. Schwarz, assuring him that his question was far from "silly" and acquainted him with the progress to date in the use of porcelain enamel for residence construction.

In a later letter Mr. Schwarz says:

Thank you for your reply to my query about porcelain enamel in home construction. I'd be very pleased if I could be placed on the mailing list of "prospects" of any porcelain enamel manufacturing firm which may be publicizing their product for home construction use. Frankly, living in St. Louis, I like everything about home ownership except the constantly recurring problem of repainting, cleaning, etc. It seems to me that a porcelain exterior, if properly handled by industry-trained architects, would and could become very popular in St. Louis with its paint-damaging smoke and paint-damaging extremes in temperature.

Incidentally, St. Louis WOULD be a good place to make a beginning in that field, IF IT IS PRACTICAL, for I think (and you can check this with the Chamber of Commerce) St. Louis has one of the highest ratios for home ownership of any city approaching it in size.

Mr. Schwarz' letters are printed as being typical of the thoughts of many a home owner who has seen porcelain enamel used for many purposes other than home building, and in whose mind the logical question is raised — "Why not for homes?" Who in the industry will be prepared to answer these questions?

Granville, Ohio

Dear Sir:

As one of the older enamel men who has observed our trade publications from the very beginning, I wish to compliment you on your *finish* and will say that without doubt it is the best yet and continually improving.

I would also like to second your suggestion in your editorial in the April number in regard to porcelain enamel finish for the exterior of refrigerators.

We have in our kitchen a refrigerator that is ten years old and it is just as white and in general appearance the same as the day we got it.

There is no doubt that the problems of manufacture, shipping and price can be worked out to a final solution, that would be to the advantage of the buying public and industry as well.

Signed: J. R. Burt

MIT Dorms.
Cambridge 39, Mass.

Dear Mr. Chase:

The several copies of *finish* you have sent me have been very interesting. They are a kind of monthly supplement to the recent courses I had at Illinois, and they keep us up on the newer applications of enamel developed during the past two or three years.

I hope that you keep me on your mailing list, for I want to keep abreast of the new enameling advancements.

Signed: W. W. Galbreath, Jr.

Adelaide, South Australia

Dear Mr. Chase:

I am very pleased to enclose a draft for $5.00 for subscription to "*finish*" for the new year. . . . We are finding it one of the most valuable and interesting of any of the publications we receive.

Signed: A. M. Simpson

Erie, Pennsylvania

"The June issue is *excellent;* this term includes articles *and* advertising — I read both."

Signed: H. R. Spencer

Response to "The Finish Line" . . .

WE HAVE HAD many interesting comments on "The Finish Line" editorial in June *finish* which carried the head line, TOO LITTLE, TOO LATE. We have selected two of these for quotation in this issue.

A good educational and promotional program needed

Camp Ellis, Illinois

"Dear Mr. Chase:

"I've been intending to write and congratulate you on your publication "*finish*" for some time . . .

"First of all I think you should be commended for your "Finish Line" page. You have the same feeling about the enamel industry's lack of a good educational and promotional program as I do. I've tried to get it across to the industry as a whole for many years but they still don't pull together and are inclined to rest on their laurels that enamel has qualities enough to put it across . . .

" . . . never cease plugging enamel in colors and textures, as I know of no material with such unlimited possibilities for good design, color and textural effects for post war architecture."

Signed: Sgt. Edward Winter

Artist Winter has done some very commendable work in enamels and is unquestionably in good position to judge its possibilities. We certainly will *continue "plugging."*

The power of the press

We quote from the closing lines of our June editorial:

"When you see innumerable articles in magazines and newspapers on competing products, don't forget that as a rule data for these articles come from some source associated, or in close contact, with the product. At present the porcelain enameling industry makes no provision for furnishing editors constructive data of a technical, practical or educational nature designed for editorial use.

"Most editors are busy men, and if our industry does not feel that it has a story to tell, then it is improbable that the average editor will feel obligated to 'dig' for stories on porcelain enamel.

"This is a subject deserving of thought and 'action.'"

Porcelain Enamel Institute
Market Development Committee

"Dear Dana:

"I have just received a letter from . . . , calling my attention to the editorial on page 11 of your June issue under the heading of 'The Power of the Press.'

" . . . and I both agree with your statement that generally speaking data for publicity articles comes from a source closely associated with the subject matter of the story. However, we do feel that the following sentence in your editorial is not entirely correct:

> "'At present the porcelain enameling industry makes no provision for furnishing editors constructive data of a technical, practical or educational nature designed for editorial use.'

"We are attempting along with the other phases of our current Market Development Program to supply editors with this type of information on behalf of the porcelain enameling industry, and as a result of this effort we are beginning to get some appreciable results.

"Of course, a great deal more can and should be done, and we are hopeful that with the plan of operation we have just recently instituted we will be able to take better advantage of our opportunities for worthwhile publicity of this type, and at the same time provide a helpful service to editors who are sincerely interested in providing worthwhile information to their readers.

"I want you to know that as a result of your editorial . . . has suggested, and I am agreeing with him, that Ed Mackasek should devote a special issue of his Porcelain Pointers bulletin to the membership calling their attention to the importance of publicity to us, the opportunities that are open for publicity of the right kind, and urge all Porcelain Enamel Institute members to keep this subject in mind and pass along to Ed their ideas.

"Furthermore, I intend to stress this at the fall meeting of the Board of Trustees when I make my annual report as Chairman of the Market Development Committee.

"In conclusion I want you to know that we all appreciate the splendid cooperative attitude you have always taken toward material emanating from P.E.I. I am hopeful that the time may come when you will feel justified in carrying a sequel to the editorial item in question in which you will point out that the porcelain enameling industry does make provision for supplying such information through the efforts of the Market Development Committee of the Porcelain Enamel Institute."

Signed: Ray Dadisman, Chairman

We, too, hope that the time may come when we will feel justified in carrying a sequel to the editorial in question.

Reference in the editorial, of course, was not to furnish material to our own industry publications. finish *has had excellent cooperation from every possible source within the industry. What we are concerned about is a logical and "adequate" setup for furnishing constructive data and feature editorial material to publications in other fields. This should include services to the architectural field, the appliance field, industrial field, as well as to women's publications, publications for the home and leading newspapers.*

We urge industry approval and backing for a constructive program. The industry will do well to get behind a program of this kind now.

Above: A corner of the color laboratory showing a few of the hundreds of color samples for which we have standard formulas.

THE CENTURY LABORATORY WORKS FOR YOU

The laboratory in the Century plant is equipped for the essential research work required for the development of up-to-date frits. It is also equipped to pre-test these frits before they go on the "firing" line.

During the thirteen years of the company's operations this laboratory has played an important part in the production of frits to meet every plant requirement. Lead-free enamels, low firing ground coats, antimony free cover coats, special colored frits and highly acid resisting enamels have all had their turn in the laboratory.

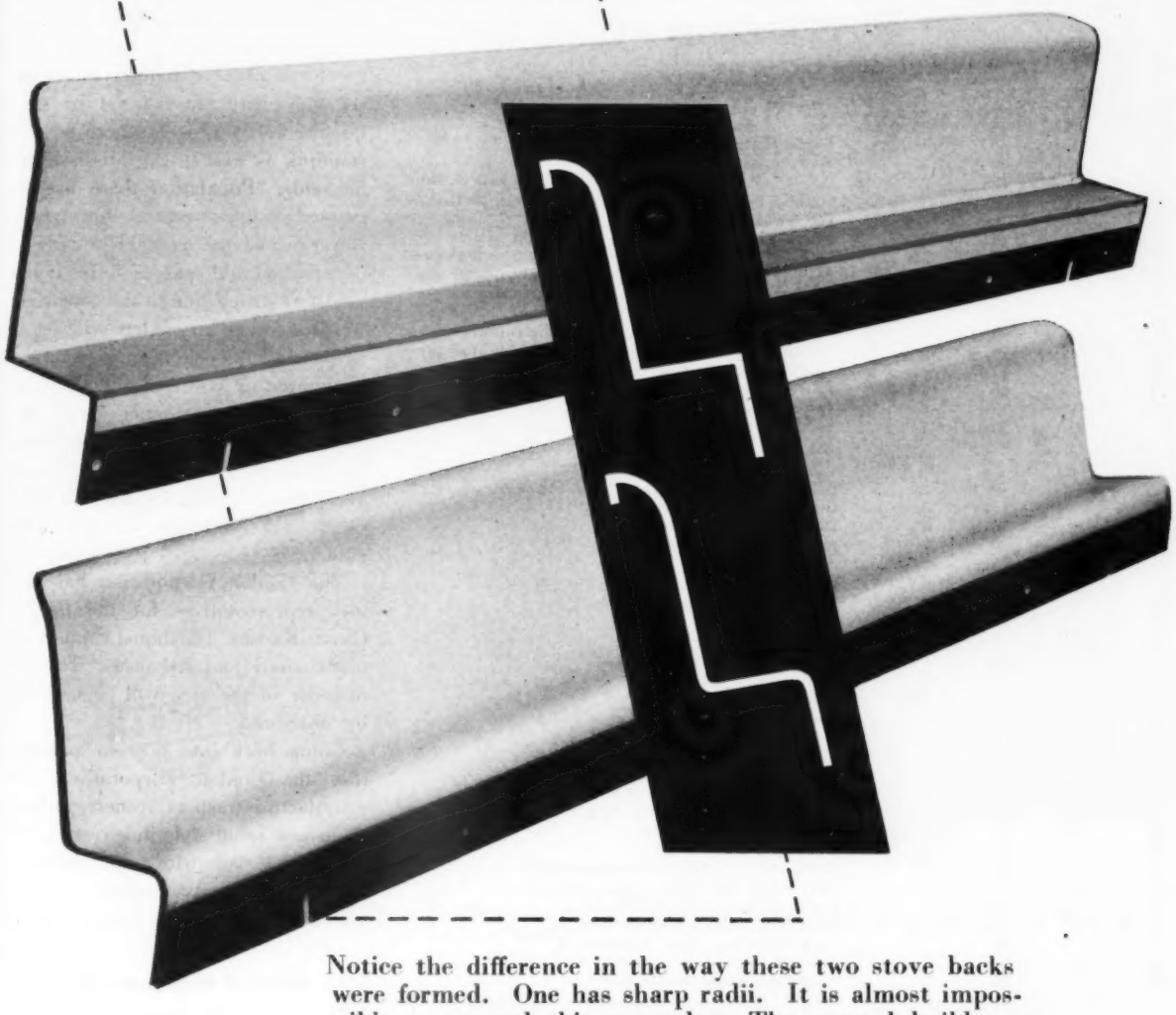
Even so, Century does not depend on laboratory results alone. Every frit you buy has been tested and time-proved in our own modern enameling plant before it is sold to others.

We repeat — you get more for your money when you buy frit from a company that both produces and applies enamel. Laboratories we must have, but enamels should be plant-proved before they are put in production. Bring your enamel production problems to production minded men — at Century.

Century Vitreous Enamel Company

6641-6661 SOUTH NARRAGANSETT AVENUE • CHICAGO • ILLINOIS

DESIGN



Notice the difference in the way these two stove backs were formed. One has sharp radii. It is almost impossible to enamel this properly. The enamel builds up in the concave bend and blues out at the convex bend.

Now look at the other splasher. Good sized radii make this an easy job. The stove builder is proud to mount it.

We have learned a lot about design in 25 years. Our experience is at your disposal if we can help you.

There is a book about this design problem published by the Porcelain Enamel Institute. It is full of helpful suggestions for the designing engineer. May we send you a copy?

VITREOUS STEEL PRODUCTS CO.

BOX 1791, CLEVELAND 5, OHIO *(Factory at Nappanee, Ind.)*

Electrostatic spraying of porcelain enamels

(Continued from Page 24)

TABLE III

EFFECT OF VARIATIONS IN SPECIFIC GRAVITY OR WATER CONTENT

Variable specific gravity combinations of fluid and atomizing pressures
Sp. gr. 1.50, flow time 6.15 sec.

Sample No.	Fluid pressure	Atomizing pressure	Atomization	Appearance of plate
16	4	5	1	Too wet, sag, application slow
17		10	2	Too wet, sag, application slow
18		15	3	Dryer, but still too wet, sag, slight orange peel, slow
19		20	3-4	Slightly wet, good surface, slight orange peel, slow
20	6	10	1	Too wet, sag, good surface, slow
21		15	2	Too wet, sag, good surface, slow, slight orange peel
22		20	2-3	Too wet, sag, good surface, slow, slight orange peel
23	8	10	1	Too wet, sag, good surface, slow, slight orange peel
24		15	1-2	Too wet, sag, good surface, slow, slight orange peel
25		20	2	Too wet, sag, good surface, slow, slight orange peel
26	10	15	1	Too wet, sag, good surface, slow, slight orange peel
27		20	2	Too wet, sag, good surface, slow, slight orange peel
28	12	15	1	Too wet, sag, good surface, slow, slight orange peel
29		20	1-2	Too wet, sag, good surface, slow, slight orange peel
30	14	15	1	Too wet, sag, good surface, slow, slight orange peel
31		20	1	Too wet, sag, good surface, slow, slight orange peel
				Sp. gr. 1.55, flow time 7.20 sec.
32	5	10	2	Good surface, slight orange peel, sag, slow
33		15	3	Good surface, slight orange peel, slow
34		20	4	Dry, grainy, slow
35	6	10	2	Sag, orange peel, too wet
36		15	2-3	Sag, orange peel
37		20	3-4	Good, slight orange peel*
38	8	10	1	Too wet, sag, orange peel
39		15	2	Sag, orange peel
40		20	3	Sag, orange peel
41	10	15	1-2	Too wet, sag, slight orange peel
42		20	3	Slight sag, slight orange peel
43	12	15	1-2	Sag, too wet, orange peel
44		20	2	Sag, orange peel
				Sp. gr. 1.60, flow time 10.20 sec.
45	6	10	1-2	Sag, slight orange peel, slow
46		15	2	Good, slight orange peel*
47		20	3	Good, slight orange peel, slightly dry*
48	8	10	1	Too wet, sag, orange peel
49		15	2	Good, slight orange peel*
50		20	3	Good, slight orange peel, slightly dry*
51	10	15	2	Very slight sag, slight orange peel*
52		20	3	Good, slight orange peel*
53	12	15	1-2	Slight sag, orange peel, too wet
54		20	2-3	Very slight sag, slight orange peel*
55	14	15	1	Too wet, sag, slight orange peel
56		20	2	Slight sag, slight orange peel
				Sp. gr. 1.65, flow time 15.55 sec.
57	8	10	2	Orange peel, slow
58		15	2-3	Good, slight orange peel, slightly dry*
59		20	3-4	Dry
60	10	15	2	Orange peel
61		20	3	Good, slight orange peel, slightly dry*
62	12	15	2	Orange peel
63		20	3	Good, slight orange peel*
64	14	15	1	Orange peel, badly
65		20	2	Orange peel, good
66		25	3	Good, slight orange peel, high overspray
				Sp. gr. 1.695, flow time 19.50 sec.
67	9	10	1	Orange peel, badly, slow
68		15	2-3	Good, slight orange peel*
69		20	3	Fair, slight orange peel, slightly dry
70	10	15	2	Good, slight orange peel
71		20	2-3	Fair, slight orange peel, slightly dry
72	12	15	2	Good, slight orange peel*
73		20	3	Very good, slight orange peel*
74	14	15	2	Good, orange peel*
75		20	2-3	Good, slight orange peel*
76	12	25	3	Excellent*

*Best in series.

INDUSTRY NEWS

(Continued from Page 34)

Pacific Coast. Of the whole country, that section offers the most attractive new sales opportunities, he asserted.

"Population shifts, tied up with decentralization of industry, have upset the entire old concept of sales quotas, and this is nowhere so outstanding as west of the Mississippi," he said. "Population there has increased 17.8 per cent in four years. Nevertheless, the available supply of distribution and sales facilities is low out of all proportion to the potentials. A battle royal for outlets will set in as soon as this condition is generally recognized in its full meaning." Population changes in other areas, Mr. Merritt pointed out, are as follows: North Central States, 3.3 per cent loss; New England, 4.6 per cent loss; South and Southeast, 3.3 per cent gain.

The Conlon Corporation has factory representatives for the Pacific Coast, Kansas, Oklahoma, and most of Missouri and Arkansas. The remainder of the area will be handled by distributors.

Going back into postwar production the Conlon Corporation will manufacture washers, ironers, including a new small style in several models, heating pads with improved temperature selectivity features; household laundry dryers and room coolers.

Howard Wolf overseas

In May 1945 *finish* one of the feature articles was "The Effect of War Production on Metal Stamping Technique," by Capt. Howard Wolf. In a brief biographical sketch of the author it was stated that he was on duty at an undisclosed location.

We now have word from Howard (somewhere in France) indicating that he received a copy of the article which was prepared prior to his leaving.

The Automatic Washer Company, Newton, Iowa, announced the settlement of a suit filed by certain holders of its old convertible preference

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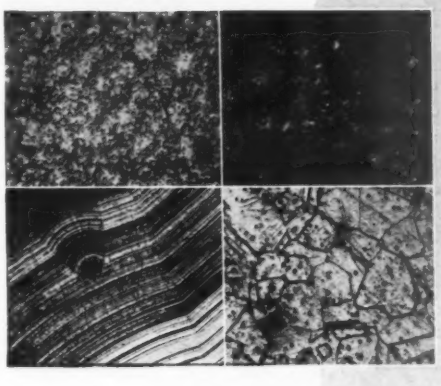
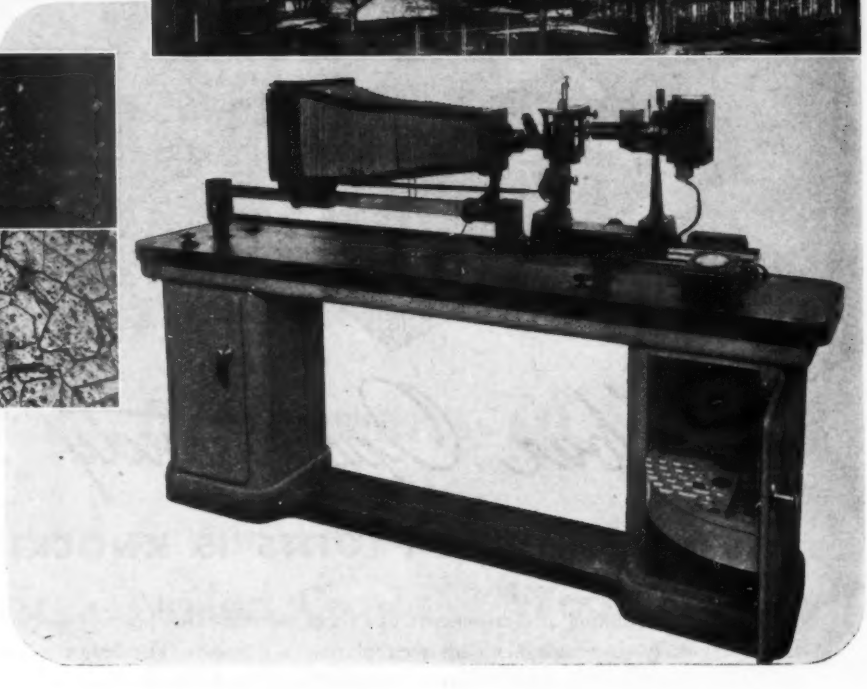
Harshaw Research Laboratories located in Cleveland

TOOLS FOR *Ceramic* RESEARCH





HARSHAW

METALLOGRAPH *Speeds* CERAMIC RESEARCH

COLORS
OPACIFIERS
FRITS
CHEMICALS

Harshaw research men rely upon the metallograph for clean-cut microphotographs of metal and ceramic sections. • The metallograph assists in the study of interfacial reactions—important for example in the bonding of porcelain enamel to metal; in the examination of pits, blisters, and similar defects; and in the determination of surface and crystalline change in a finished product produced by a modification of batch or processing. • The metallograph is useful in research, in control, and in backing up field service. Buy from Harshaw with confidence.

THE HARSHAW CHEMICAL CO.
1945 East 97th Street, Cleveland 6, Ohio
BRANCHES IN PRINCIPAL CITIES

Your Opportunity

FOR POSTWAR PROFITS IS KNOCKING NOW

WE ARE running advertisements like these regularly—in magazines with a circulation of 22,102,562—to remind your future customers of the virtues of porcelain enamel goods and the enduring qualities of U·S·S Steels.

As a result of this advertising, many of the people who plan to buy bathroom and kitchen equipment, washers, refrigerators, cabinets, tables and stoves, will prefer the smooth, colorful, impervious finish they get only with porcelain enamel. And they will also want the finish to be based on strong, tough, durable U·S·S Steel.

That's one reason why it will pay you to fabricate your postwar products of U·S·S VITRENAMEL Sheets. They are true to gage, flat, rigid, ductile and strong. Their specially processed surface enables enamel and metal to unite in an enduring bond. The U·S·S Label they bear is a guarantee of uniformly high quality and is recognized by your customers and their customers as the mark of good steel.

Be sure you have complete, up-to-date information on U·S·S VITRENAMEL Sheets. Our specialists will be glad to consult with you now on your present problems and your postwar plans. Write to us today for this free service.

U·S·S VITRENAMEL SHEETS

CARNEGIE-ILLINOIS STEEL CORPORATION

Pittsburgh and Chicago

Columbia Steel Company, San Francisco, *Pacific Coast Distributors*
United States Steel Export Company, New York

PORCELAIN ENAMEL ON USS Vitrenamel UNITED STATES STEEL

UNITED STATES STEEL

The public be served! . . . *(Continued from Page 18)*

about buying psychology. Whether unconsciously or not, every customer regards himself as something of a philanthropist. He has exercised his right of choice, and he has chosen to trade in this particular place. He has money in his pocket, a situation that always inflates the ego. He has come to spend it. If it is a considerable sum, he has probably dwelt in passing upon the impression that his purchase will make upon the salesman, even if he is not the proprietor at all. Did you ever drop into a broker's office and say, with studied nonchalance, "Buy me a thousand shares of steel," or oil, or copper, as the case may be? All right, then you know what I'm talking about! But buyers like to have the sellers make a little fuss about them. They like to think their patronage is appreciated. And the surest way to give them that impression is to give them good service.

I'll put my best *man* forward

The first rule of selling is to wait on trade. When I go into business, the first thing I shall do will be to pick out the keenest, smartest man or woman on the staff, and put that individual right inside the door to greet the customer, and make him feel welcome, and to ascertain his wants and needs. I shall not follow a practice which is all too common and pick out the biggest boob on the staff to occupy the information desk. There will be enough stores doing that without me. But I shall see to it that everybody, friend and stranger, old and young, rich and poor, shall get the same eager, friendly, cordial and attentive reception.

Smaller stores can not afford to hire receptionists, of course. No matter, every clerk should be trained to fill that office. Did you ever stand at a counter and finger the goods, and drum with your fingers, and whistle through your teeth, and wait, while the clerk who waited on another customer ten feet away ignored the very fact of your existence? All right, then you'll know what I am talking about here, too. I don't agree for a minute that the customer is always right, for half the time he isn't, but I do contend that the customer is always welcome and it is the business of the store to tell him so, whether by word or deed, or both.

"He profits most who serves best" is an admirable statement of ethics and morals, of course, but it is an equally admirable statement of the principles of retail selling, too, for it only says again in formal fashion what my friend George Whipple said so succinctly many years ago: "Geoffrey, never let a nickel get out of the store."

The manufacturer who produces *a fine product, whether it be a "top hat" or a refrigerator, has done only half a job. The careful selection of retail outlets and the proper training of those who serve the buying public can play an equally important part in the success or failure of his miracle of the production line. Says Mr. Morgan, " . . . business* stays *where it is well treated."*

Industrial Publications

Meet the Challenge

This is the theme of a new 28-page portfolio recently put into the hands of the Tappan Stove company's field organization.

It illustrates some of the important competition factors as "challenges" the manufacturer and dealer will face in the merchandising of gas ranges when the green light is given for volume production of civilian goods.

The constructive steps that are being made to meet these "challenges" are outlined as "answers." Prominent among these are plant expansion, new product development, national magazine advertising and store floor planning.

Westinghouse Newsfront

The first issue of Westinghouse "Newsfront," a monthly publication by Westinghouse Electric Corporation, appeared in April. The four-page news bulletin printed in two colors, and illustrated with drawings and photographs, contains short articles describing the latest achievements by the company in the fields of scientific research, engineering and production.

Requests to be placed on the mailing list should be addressed to the Editor, Westinghouse "Newsfront," 306 Fourth Avenue, Box 1017, Pittsburgh, Pa.

Industrial Supplies and Equipment

New Long-Lyfe Blast Nozzle

Adding to its present line of blast nozzles, American Foundry Equipment Company, 555 S. Byrkit Street, Mishawaka, Indiana, is now in a position to supply a complete line of nozzles using Boron Carbide inserts.

An added feature to long service

life, according to the manufacturer, is the jacketing of this insert in an abrasion resistant alloy steel. The new nozzle is guaranteed for 1500 hours of service when used with steel shot or grit and for 750 hours when used with silica sand.

Improved blasting efficiency, decreased air consumption, and low hourly costs are among the advantages claimed by the manufacturer.

INDUSTRY NEWS

(Continued from Page 46)

stock, in which the plaintiffs sought to recover dividends accrued on their stock to January 8, 1938, the effective date of the recapitalization of the concern. W. Neal Gallagher, president and general manager, stated that settlement was made for "a relatively small cash payment."

Erie Enameling elects officers

At a recent meeting of the stockholders of The Erie Enameling Company, Erie, Pa., Herbert R. Spencer was elected president of the company and George Weber was elected secretary.

A. O. Smith on Spotlight program

The Coca-Cola Spotlight Band broadcast, featuring George Olsen and his orchestra, included a salute to the war effort of A. O. Smith Corporation in a broadcast on Monday, June 4.

New training department at American Stove

American Stove Company recently organized a Sales and Service Training Department. The department announces plans for training present and new salesmen of the firm, and for training retail salesmen and service men of American Stove's dealers. A series of sound slide films is being prepared.

A preference rating of AA-2X has been assigned manufacturers of food processing machinery and equipment, putting industries in this category ahead of virtually all other industries not actually engaged in war or war supporting production.

Slightly more leeway in approving applications for construction projects needed for starting or resuming civilian production or services was announced June 11 by the War Production Board. Broadening of the criteria to be met for WPB authorization of such construction is designed to further reconversion to the extent that such construction can be undertaken without interference with war production or with more essential war-supporting activities, WPB said.

CLASSIFIED ADVERTISING

RATES

Display classified:	1 ti.	6 ti.	12 ti.
1" to 2" inclusive, per inch	6.00	5.50	5.00
3" to 5" inclusive, per inch	5.50	5.00	4.50
6" to 9" inclusive, per inch	4.50	4.00	3.50

Measured in vertical column inches, columns 2⅛ inches wide. Accepted in column inch multiples only. Add 25% for reverse plates.

POSITIONS OFFERED

WANTED
CERAMIC ENGINEER

For position as Superintendent of Porcelain Enameling Department. Permanent position with leading sign manufacturer. Location — Chicago, Illinois.

Submit experience and educational qualifications, salary requirements, etc.

In reply address Box No. 745, c/o *finish*, 360 N. Michigan Avenue, Chicago 1, Ill.

WANTED: Superintendent for porcelain enameling plant. Make own frit. Experience in supervising the manufacture of shells desirable. State qualifications fully, age, experience and salary desired. Confidential. Good and permanent position for the right man. W.M.C. Rules apply.

GEUDER, PAESCHKE & FREY CO.
324 No. 15th Street
MILWAUKEE 3, WISCONSIN

WANTED: Enamel plant superintendent and foreman for each of three stove plants. Locations — Eastern Seaboard, Middle West and Pacific Coast. Please state full name, home address, age, height and weight, marital status, physical handicaps if any, education, work experience, entrance salary requirements and the date of availability.

Note: This information will be regarded as confidential and no requests for references will be made without your full knowledge and consent.

Address Box 745-ABQ, c/o *finish*, 360 N. Michigan Ave., Chicago 1, Ill.

WANTED
ENAMELING PLANT
SUPERINTENDENT

To take charge of large California Porcelain Enameling Plant producing Gas Ranges. Must have ability to supervise and handle large production. Excellent opportunity for right person.

In reply address Box No. 7451, c/o *finish*, 360 N. Michigan Avenue, Chicago 1, Ill.

EQUIPMENT FOR SALE

FOR SALE: 4 – Steel tanks 30" x 120" x 42" deep I.D. fabricated from 3/16" plate, with a 3" x 3" angle iron welded around top edge. One tank 8 mos. old; others less than 2 yrs. old.

1 – Lead lined wooden tank 36" x 130" x 50" deep I.D. constructed of 4" finished cypress — purchased in 1938.

1 – Wooden tank 60" x 30" x 42" deep I.D. 2" finished cypress — New 1944.

THE ERIE ENAMELING COMPANY
Erie, Pennsylvania